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ABSTRACT

In fall 1992, 87 percent of coordinators of funded local tech prep consortia (n=897) completed the third national evaluation survey. Findings indicated the following: formation of new consortia slowed; they grew larger and included a substantial and increasing share of school districts; middle school and postsecondary membership expanded; inclusion of business, industry, and labor grew; and business and labor participated less in consortium leadership. Consortia engaged in promotional activities and took steps to increase access of special populations. Professional development remained a central part of tech prep. Local consortia implemented diverse program models. Attention to career development increased gradually, availability of career-focused programs of study and participation rose sharply, curriculum change focused on applied academics, articulation expanded, and workplace activity was more common. Tech prep participation was most strongly linked to enrollment in vocational courses. Participants represented a small but growing share of the secondary school population, and growing numbers were involved in workplace activities. Many tech prep high school graduates chose postsecondary education and training as a common pathway, but they increasingly chose to attend four-year institutions. Consortia collected various evaluation plans and used them in different ways. Coordinators identified successful aspects of tech prep development and major barriers faced. (YLB)

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Heading Students Towards Career Horizons

Tech-Prep Implementation Progress 1993-1995

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HEADING STUDENTS TOWARDS CAREER HORIZONS

Tech-Prep Implementation Progress, 1993-1995

1997

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We are grateful for the time and efforts of all those who helped to complete this series of Tech-Prep implementation reports.

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EXECUTIVE SUMMARY

Tech-Prep has become a common ingredient in efforts to improve education throughout the nation. The program model for Tech-Prep was formulated in the early 1980s by Dale Parnell (1985) as a way to improve the skills and employment preparation of young Americans, particularly those who might not otherwise pursue higher education. As originally conceived, the Tech-Prep model would offer students planned career "pathways" that link their high school classes to advanced technical education in community colleges or other postsecondary institutions. The model stresses the value of giving students opportunities for applied, hands-on approaches to learning academic concepts. The 1990 amendments to the Carl D. Perkins Vocational and Applied Technology Education Act, in Title IIIE, provided funding for states to develop Tech-Prep programs; states in turn distribute funds to local Tech-Prep consortia of schools and postsecondary institutions to support their implementation of Tech-Prep concepts. Title IIIE of the Perkins Act also provided for a national evaluation to document the planning and implementation of Tech-Prep. The evaluation is being conducted by Mathematica Policy Research, Inc. for the U.S. Department of Education, with Northwest Regional Education Laboratory as a subcontractor.

This report is the third in a series based on one major component of that evaluation--surveys of local Tech-Prep consortia. In fall 1995, the third annual survey was administered to the coordinators of all 1,029 local Tech-Prep consortia funded up to that point in all states. The survey achieved a completion rate of 87 percent (897 consortia). The report presents findings about the status of Tech-Prep at the time of the third survey and about changes observed since the earlier surveys in 1993 and 1994. This executive summary highlights the salient points presented in the full report.

The Tech-Prep infrastructure is widespread, but a small fraction of students participate

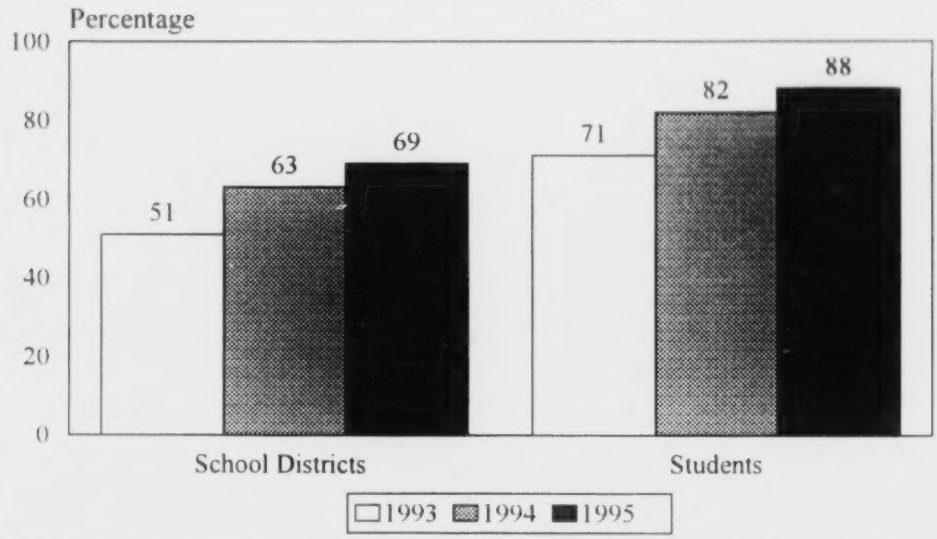
Most school districts in the United States now belong to a Tech-Prep consortium. Local consortia have expanded in number and size, increasing the percentage of all districts included from 51 percent in 1993 to 69 percent in 1995 (Figure 1). Along with this expansion in secondary school membership has come an increase in the involvement of postsecondary institutions. From 1993 to 1995, the number of community college members has risen from 975 to 1,412, and the number of four-year postsecondary institutions identified as consortium members has risen from 420 to 725. Although these estimates undoubtedly reflect some duplicate reporting (because individual colleges are often members of multiple consortia) there has been a definite increase in the prevalence of collaboration between school districts and postsecondary partners. Employers were included as members of about 79 percent of all consortia in 1995, up from 72 percent in 1993.

These consortia and the school districts they include encompass the overwhelming majority of students attending American high schools. With the expansion in district membership in Tech-Prep consortia, the percentage of U.S. secondary students who could potentially be exposed to the changes associated with Tech-Prep has risen from 71 percent in 1993 to 88 percent in 1995 (Figure 1).

The percentage of students who actually participate in Tech-Prep, however, remains relatively low. Using the definitions of Tech-Prep participation that consortia themselves have adopted, we estimate that participation has risen from 4.7 percent of all secondary students in school year 1992-1993 to 8.4 percent

FIGURE 1

PERCENTAGE OF U.S. SECONDARY DISTRICTS AND STUDENTS INCLUDED IN TECH-PREP CONSORTIA, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

NOTE: Percentages are adjusted for response rate.

in school year 1994-1995.[1] Although originally conceived as a way to strengthen education for the "neglected majority"--students whose performance falls in the middle range--Tech-Prep has not yet grown enough to claim success in reaching that full population.

Despite this low participation rate, a large and growing number of students are involved in Tech-Prep. In school year 1994-1995, the 586 consortia (65 percent) that reported on participation identified almost 740,000 Tech-Prep high school students, an increase of more than 300 percent from school year 1992-1993 (Table 1). Growth in participation reflects in part the increase in the number of Tech-Prep consortia from 812 to 1,029 in two years. Enrollment in existing consortia is also increasing. Consortia are on average reporting more participants (up from 692 in 1993 to 1,259 in 1995).[2]

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[1]This estimated participation rate is based on those consortia that provided counts of Tech-Prep students; it assumes that consortia that did not report on participation actually had approximately the same rate of student involvement in Tech-Prep.

[2]Some of this increased participation is observed because more consortia could report on participation in 1995 than in earlier years, and they could report on participation in a higher proportion of their districts. However, this does not account for all the growth in participation. For example, in consortia where the number of districts reported on remained constant in the last two surveys, reported participation increased by 35 percent.

TABLE 1

REPORTING OF STUDENT PARTICIPATION AND OUTCOMES
IN 1993, 1994, AND 1995

	Consortia Providing Data			Number of Students Reported*		
	1993	1994	1995	1993	1994	1995
Overall Questionnaire Completion	702	867	897			
Tech-Prep Participation	250	459	586	172,882	432,067	737,635
Tech-Prep High School Graduates	94	238	334	12,265	43,623	95,509
Employment After High School	33	71	107	892	4,969	10,637
Postsecondary Entry	62	149	205	3,551	14,509	33,867
Community-technical colleges	62	149	205	2,422	9,088	19,138
Four-year institutions	62	149	205	738	4,059	12,054
Other	62	149	205	391	1,362	2,675
Entry to Postsecondary Articulated Occupational Specialty	46	105	150	1,678	6,042	8,439
Completion of Postsecondary Program	8	11	8	274	219	127
Employment After Postsecondary Completion	5	7	3	107	96	82

SOURCE: Inventory of Tech-Prep Planning and Implementation, fall 1993, 1994, and 1995.

*Counts of students reported in 1993 refer to school year 1992-1993. Similarly, 1994 and 1995 counts refer to school years 1993-1994 and 1994-1995, respectively.

Tech-Prep still takes diverse forms, but it is more defined than in earlier years

The definitions of Tech-Prep and of participation in it are slowly becoming more focused, but they remain quite diverse. In 1995, 75 percent of all consortia reported that there was a defined core program of activities for Tech-Prep students in at least one of their member districts, up from 63 percent in 1993. In part, this trend probably reflects the increasing influence of Tech-Prep models and technical assistance provided by state education agencies. However, definitions of core programs still vary not only across but within consortia; just 56 percent of consortia reported in 1995 that they had a single consistent definition of a Tech-Prep core program that was used in all their member districts. When asked to define what activities students must engage in to be considered a Tech-Prep participant, consortia used 31 different combinations of criteria, variously including choosing Tech-Prep, completing a plan for their studies, taking applied academic or vocational courses related to their career focus, and engaging in a related workplace activity. Only 28 percent of consortia that reported a definition of a participant described Tech-Prep student involvement in a way that comes close to fulfilling the concept of a defined program of study as promoted by Title IIIE of the Perkins Act.

Attention to career development is gradually increasing, for Tech-Prep students and others

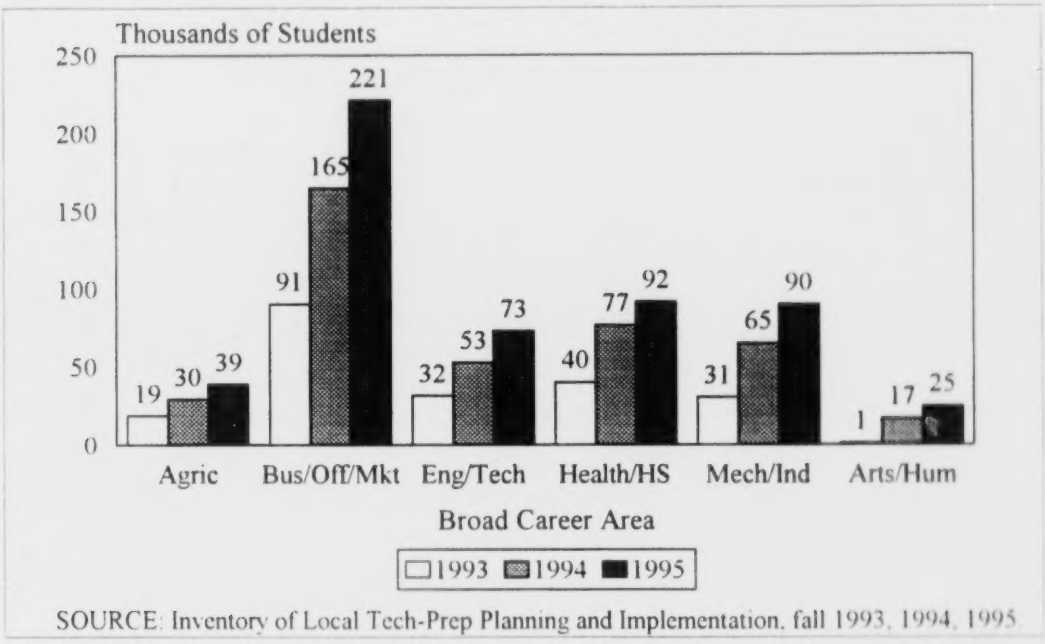
The Tech-Prep survey suggests that schools are gradually giving greater emphasis to career awareness activities and career counseling, in an effort to help students make informed choices about Tech-Prep programs, postsecondary programs, and career goals. The 1995 survey showed continuing increases in the availability of these career development activities, which are in some cases targeted specifically to Tech-Prep students and in other instances to students in general. In 1995, for example, 36 percent of consortia reported that *all* their member high schools had developed special Tech-Prep career counseling materials, up from 28 percent in 1993. Similarly, 41 percent of all consortia reported that education plans spanning high school and postsecondary programs were used in all their high schools, up from 33 percent in 1993. Such changes are also occurring at the middle school level, where most types of career development activity show gradual increases in consistent availability.

Availability of career-focused programs of study, and participation in them, have risen sharply

Programs of study that specify or simply recommend appropriate academic and vocational courses for a particular career focus are becoming more widely available, and participation in them has grown substantially since 1993. The percentage of consortia in which at least some schools offered such programs has risen from 67 percent in 1993 to 75 percent in 1995. Although Tech-Prep participation continues to account for a small fraction of all high school students, participation in such programs has more than doubled since 1993 in all broad career areas. Consortium schools have begun to define programs of study not only in technical fields but also in the arts and humanities, perhaps to broaden the appeal of Tech-Prep (Figure 2).

FIGURE 2

NUMBER OF STUDENTS PARTICIPATING IN SPECIFIED CAREER CLUSTER PROGRAMS, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995

Curriculum change continues to focus on applied academics, but not in all schools

Almost all Tech-Prep consortia reported in 1995 that they were implementing applied academic curricula, and more than 40 percent of consortium resources are spent on either curriculum development or staff development, which often focuses on teaching methods. Commercially available curriculum packages continue to be the most common vehicle for introducing applied instruction. For example, the applied mathematics course distributed by the Center for Occupational Research and Development (CORD) is now used to some extent in 84 percent of all consortia. However, applied academic curricula are still far from universally adopted at the school level; the CORD math curriculum, for example, is found in fewer than half of consortium secondary schools.

Articulation continues to expand

Although articulation of high school and college programs is a long-standing practice, 82 percent of Tech-Prep consortia reported that new agreements were signed between 1993 and 1995. Articulation is still being extended to new occupational areas or to additional members of local consortia. The number of postsecondary institutions involved in articulation (most often community colleges) has continued to increase, reaching more than 1,500 in 1995. Although some colleges are inevitably double-counted because they sign articulation agreements with secondary schools in multiple consortia, it appears that most

of the nation's community colleges are involved in articulation. By far the most common feature of articulation agreements is a specification of the conditions under which students can receive college credit for courses completed in high school. Much of the articulation probably remains focused on awarding credit for individual courses rather than for programs of study.

Workplace activity is becoming more common as an element of Tech-Prep

Although not originally required in Title IIIE of the Perkins Act, workplace activities are more commonly identified by consortia as a core element of Tech-Prep than in earlier years. In 1995, 65 percent of the consortia that have a consortium-wide definition of Tech-Prep (36 percent of all consortia) reported that it includes occasional workplace exposure experiences, such as worksite visits or assignment to a mentor, up from 45 percent in 1993. Work experience or training was named as a core program element in 40 percent of these consortia, compared to 18 percent in 1993. Although only about 42 percent of consortia overall are able to track numbers of Tech-Prep students actually involved in such activities, reports from those that can suggest participation is growing. For example, about 24,000 Tech-Prep students were involved in worksite visits or job-shadowing experiences in 1994, while about 55,000 Tech-Prep students reportedly participated in these experiences in 1995. This trend most likely reflects enthusiasm for the objectives of the School-to-Work Opportunities Act (STWOA) and its emphasis on workplace activity.

Lack of Tech-Prep databases continues to limit tracking of student outcomes

In all three years of the Tech-Prep survey, many consortia have lacked data required for tracking participation and outcomes of Tech-Prep students. This difficulty is particularly pronounced with regard to reporting on outcomes such as high school graduation, entry to postsecondary education, and employment in occupations related to secondary programs of study. Many consortia have planned Tech-Prep evaluation databases that might mitigate this problem; in 1993 three-fourths of all consortia reported that they expected to develop a computerized database with information on individual Tech-Prep students. In 1995, however, few had done so: only 21 percent of consortia had even partially implemented such databases, and just 22 consortia out of 897 said they had done so fully. Although improvements in the ability to report on Tech-Prep student participation have been noted over the three years of the survey, consortia and their member schools continue in most cases to have great difficulty reporting on what happens to their students after they graduate.

Consortia may be seeking to broaden appeal of Tech-Prep

Although Tech-Prep began as an initiative to enhance the preparation of students interested in technical careers, its objective and focus may be shifting somewhat in practice. This change is driven in part by the association parents and students make between Tech-Prep and vocational education. Even after several years of implementation experience, consortia continue to report that their efforts to introduce career-focused programs of study that link secondary instruction with technical degree programs at community colleges are hindered by negative attitudes toward vocational education. As a result, Tech-Prep programs often have difficulties recruiting appropriate, interested faculty and students.

The survey data, supported by visits to the evaluation in-depth study sites, suggest that some consortia are trying to widen the scope of Tech-Prep initiatives to include a broader segment of the student population. For example, Tech-Prep programs of study in the Art/Humanities have become increasingly prevalent, perhaps reflecting a trend toward offering a comprehensive set of programs of study from which all or most students in a school might choose, rather than a more selective set of Tech-Prep programs based on traditional vocational areas. Tech-Prep high school graduates are increasingly choosing four-year colleges and universities over other postsecondary options, and those who do attend community college are less likely to enroll in articulated occupational degree programs, preferring instead general academic transfer programs. These data suggest that Tech-Prep programs may have become less focused on creating structured pathways that lead to technical associate degree programs, possibly as way to encourage participation by students with more diverse educational and career aspirations. This shift is probably influenced by consortium efforts to adapt to STWOA priorities, which promote the inclusion of "all" students in educational activities that are similar to those included in the Tech-Prep model.

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I. INTRODUCTION

Since its authorization in federal legislation in 1990, Tech-Prep has become a common element in efforts to improve education throughout the nation. The Tech-Prep strategy focuses on improving students' awareness of and general preparation for careers, their technical skills, and their skills in mathematics, language, and reasoning. These aims are intended to be addressed through career-oriented programs of study that link secondary and postsecondary education and academic and vocational instruction. This report is part of a federally funded national evaluation, conducted by Mathematica Policy Research, Inc., (MPR) for the U.S. Department of Education (ED), which is documenting the planning and implementation of Tech-Prep programs. The report describes the status of Tech-Prep development in 1995 and documents recent changes in program implementation. The findings are based on the last of three annual surveys of all local Tech-Prep consortia (in fall 1995) and comparisons to the two previous surveys. The report updates findings on program implementation assessed in earlier reports, based on the first two surveys.[1]

TECH-PREP PROGRAM BACKGROUND

Tech-Prep was conceived in the early 1980s as a way to improve the skills and employment preparation of young Americans, particularly those who might not otherwise pursue higher education. The Tech-Prep model stresses the importance of giving students opportunities for applied learning--practical, hands-on ways to master academic concepts--and emphasizes development of clearly defined academic and technical competencies. As originally conceived, the Tech-Prep model would offer students planned programs of study or career "pathways" that link their high school classes to advanced technical education in community colleges, technical colleges, or apprenticeship programs; later this concept was expanded by some proponents to include baccalaureate programs. Ideally, these pathways would help students prepare for well-paying jobs in careers with strong projected labor demand.

Explicit federal support and guidance for Tech-Prep programs were provided in the reauthorization of the Carl D. Perkins Vocational Education Act of 1984. The 1990 amendments retitled the legislation the Carl D. Perkins Vocational and Applied Technology Education Act (Perkins Act) and provided Tech-Prep program development guidelines and funding in Title IIIE (which was labeled the Tech-Prep Education Act). All programs funded under the Perkins Act, including Tech-Prep, are administered by ED. Title IIIE identified seven elements required in programs that receive federal Tech-Prep funding:

1. ***Articulation agreements*** between secondary and postsecondary participants in Tech-Prep consortia, to establish a basic framework that links secondary and postsecondary courses

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[1]Results of the earlier surveys are reported in Silverberg and Hershey (1995) and Silverberg (1996c). References in this report to 1993 and 1994 results pertain to findings from the first and second surveys of local consortia.

2. ***At least a 2 + 2 design***, which defines a common core of math, science, communications, and technology for all students as a basis for more advanced and specialized courses during four-year or six-year program sequences[2]

3. ***A Tech-Prep curriculum*** appropriate to the needs of each secondary and postsecondary institution, so that the overall program design makes full use of each school's resources but also considers the needs of its student body

4. ***Joint staff development for secondary and postsecondary instructors,*** to promote cooperation and a common understanding of objectives, overcome differences in institutional perspectives, and make students' transition from high school to postsecondary program components as "seamless" as possible

5. ***Training of secondary and postsecondary counselors,*** to promote effective student recruitment, retention, and postprogram placement

6. ***Preparatory services***, such as recruiting, counseling, and assessment, to help students understand Tech-Prep, explore educational and career options they could pursue through Tech-Prep, formulate a career goal, and select a program and courses to prepare for that goal

7. ***Measures to ensure access*** for special populations such as minorities, students with disabilities, disadvantaged students, and at-risk students

Title IIIE authorizes federal funding for Tech-Prep programs that meet these requirements. Federal funds are distributed to states, which then award grants for planning and implementation to consortia made up of local, secondary educational agencies and postsecondary institutions. Congress first appropriated $63.4 million to support development of Tech-Prep programs in fiscal year (FY) 1992. It has continued to fund Tech-Prep in each subsequent year; FY 1998 funding for Title IIIE is $100 million.

THE NATIONAL EVALUATION

Title IIIE of the 1990 Perkins Act required the Secretary of Education to submit a report on the effectiveness of the program at the end of the first cycle of federal funding. In October 1992, ED's Office of Policy and Planning awarded a contract to MPR and its subcontractor--Northwest Regional Education Laboratory (NWREL)--to conduct a national evaluation of the Tech-Prep Education Program.

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[2]In its original form, the Tech-Prep Education Act authorized the use of federal funding for program activities starting in 11th grade. Regulations issued in 1994 allowed use of program funds beginning in ninth grade.

designed to identify effective practices as models for Tech-Prep consortia.[3] To pursue these objectives, the evaluation is being carried out in three major components:

1. ***A survey of state-level Tech-Prep coordinators***, to document the state role in funding and guiding the development of Tech-Prep programs--conducted twice, in fall 1993 and fall 1996

2. ***A survey of local Tech-Prep consortia,*** to document their characteristics and development--conducted annually for three years, beginning in fall 1993[4]

3. ***In-depth studies of selected local programs,*** to document their implementation progress on the basis of four annual site visits and to describe the high school and postsecondary outcomes of a sample of students on the basis of a follow-up survey

DATA SOURCES FOR THIS REPORT

This report draws on two major data sources. Information on local Tech-Prep implementation came from a survey questionnaire--the *Inventory of Local Tech-Prep Planning and Implementation*--administered to consortium coordinators, in fall 1993, 1994, and 1995. In the analysis of the survey data, we also used data on secondary district enrollments compiled by ED's National Center for Education Statistics (NCES). Each data source is discussed below.

Inventory of Local Tech-Prep Planning and Implementation

The Inventory of Local Tech-Prep Planning and Implementation was administered over the three survey years to an expanding number of local consortia. In fall 1993, the survey included all consortia that were operating with Title IIIE funding during FY 1993, including those funded for the first time that year (FY 1993 grantees) and consortia that were already operating in their second year of funding (FY 1992 grantees). In fall 1994 and fall 1995, the list of consortia was expanded to include any consortium receiving initial grants in each of those years. Once in the survey sample, a consortium remained in it unless it stopped operating or merged with another consortium.

Survey completion rates have been consistently high. In the first survey in fall 1993, the overall response rate was 86 percent (702 of 812 consortia). Response rates to the 1994 and 1995 surveys were 91 percent (867 of 953 consortia) and 87 percent (897 of 1,029 consortia). Table I.1 presents the 1995 survey response rates, by state.

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[3]An earlier report (Hershey et al. 1996) identified and described in detail how some of the consortia included in the in-depth study component of the evaluation approach commonly encountered implementation problems.

[4]In its original design, the evaluation was to include four annual surveys of local consortia. However, the final survey was dropped from the evaluation plan because it would have overlapped with a more recently initiated survey of School-to-Work partnerships.

TABLE I.1

LOCAL 1995 SURVEY RESPONSE RATES, BY STATE

State	Survey Sample[a]	Number of Respondents	Response Rate
Alabama	25	24	96
Alaska	5	4	80
Arizona	13	13	100
Arkansas	14	14	100
California	84	81	96
Colorado	30	22	73
Connecticut	12	7	58
Delaware	1	1	100
District of Columbia	1	1	100
Florida	26	17	65
Georgia	91	74	81
Hawaii	1	1	100
Idaho	6	6	100
Illinois	39	39	100
Indiana	15	15	100
Iowa	14	11	79
Kansas	12	12	100
Kentucky	98	81	83
Louisiana	14	13	93
Maine	5	5	100
Maryland	16	15	94
Massachusetts	11	11	100
Michigan	39	29	74
Minnesota	26	24	92
Mississippi	15	15	100
Missouri	14	14	100
Montana	6	5	83
Nebraska	6	6	100
Nevada	4	2	50
New Hampshire	6	4	67
New Jersey	25	22	88
New Mexico	15	11	73
New York	30	30	100
North Carolina	58	47	81
North Dakota	1	1	100
Ohio	24	24	100
Oklahoma	18	18	100
Oregon	17	5	29
Pennsylvania	27	26	96

TABLE I.1 *(continued)*

State	Survey Sample[a]	Number of Respondents	Response Rate
Rhode Island	1	1	100
South Carolina	16	16	100
South Dakota	4	2	50
Tennessee	14	14	100
Texas	25	25	100
Utah	9	8	89
Vermont	9	4	44
Virginia	27	20	74
Washington	22	22	100
West Virginia	11	11	100
Wisconsin	16	16	100
Wyoming	9	6	67
Puerto Rico	1	1	100
Virgin Islands	1	1	100
U.S. Total	**1,029**	**897**	**87**

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

[a] The survey sample was defined as all Tech-Prep consortia that had received Title IIIE funding for FY 1995 or earlier.

NCES Common Core Database

The Common Core Database is a national statistical database containing information on all public elementary and secondary schools and districts in the United States. It is compiled each year from data collected by NCES and the U.S. Bureau of the Census. At the time of the fall 1995 survey, the most recent data available were for school year 1993-1994.

NCES school-level data were used to reduce the response burden on local coordinators. The local survey asked coordinators to report the NCES ID number for each secondary district in their consortium. Using the district identifiers, we constructed aggregate data on school enrollments by high school grade and by racial/ethnic groups for districts in each consortium.[5]

ORGANIZATION OF THE REPORT

The rest of the report is divided into five chapters. Chapter II discusses the organization of Tech-Prep consortia, the funding resources available to them, and the purposes for which the consortia use those resources. Chapter III describes the role of staff development in Tech-Prep consortia and how consortia go about promoting Tech-Prep concepts to schools, students, and parents. Chapter IV presents a detailed discussion of the core elements of Tech-Prep programs, focusing on school-based components, such as articulation between high school and postsecondary programs, the use of applied academic curriculum approaches, and the integration of academic and vocational instruction. Chapter IV also presents estimates of the degree to which various workplace activities are available in communities that Tech-Prep consortia serve and the extent to which workplace activity has become a core component of Tech-Prep programs. Chapter V presents consortium reports on the level of student participation in Tech-Prep and postsecondary outcomes, to the extent that consortia are able to track students' postgraduation paths. Finally, Chapter VI summarizes the efforts local consortia are making to evaluate their own progress, as well as their views on the strengths and weaknesses of their programs.

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[5]The NCES data have two limitations. First, the most recently available NCES data have always been for the school year prior to the year that is the focus of the survey. (However, our analysis of district enrollments shows relatively little annual change, so comparisons of Tech-Prep student data to NCES student data from the prior year are still accurate and useful.) Second, six states did not report to ED on school enrollments by racial/ethnic group. Comparisons of the racial/ethnic composition of the Tech-Prep participant population with all secondary students in Tech-Prep districts exclude those states.

II. THE ORGANIZATION AND RESOURCES OF TECH-PREP CONSORTIA

The introduction of Title IIIE into the 1990 Perkins Act initiated the formation of Tech-Prep consortia in every state. Since 1991, when Title IIIE grants were first awarded, new consortia have been organized each year, and established consortia have generally continued to operate and even expand. State Tech-Prep funding practices have, for the most part, determined the number and structure of local consortia formed nationwide

The organizational features and available resources of Tech-Prep consortia can influence how their programs develop. The location, or urbanicity, of consortia may affect their ability to draw area businesses into consortium activities. Consortium size can determine how closely members collaborate and adopt similar Tech-Prep models. The types of members that participate in consortia and play leadership roles can affect which features of Tech-Prep are emphasized. The pace and direction of reform efforts could be affected by the amount of resources available for Tech-Prep activities. This chapter describes in detail the current status of these factors and the extent to which they have changed over time. Succeeding chapters analyze the ways in which these factors have affected Tech-Prep implementation.

THE NUMBER AND GEOGRAPHIC DISTRIBUTION OF TECH-PREP CONSORTIA

Title IIIE of the Perkins Act gives state agencies significant latitude in determining the number and types of consortia that are awarded funds. In some states, such as Texas and Oregon, local responsibility for Tech-Prep was given to established groupings of secondary agencies and postsecondary institutions that administer basic vocational funding and/or other workforce development initiatives. These regional entities became local consortia. A few states, such as Kentucky, decided to allocate Tech-Prep grants to individual school districts to work with their postsecondary partners. In other states, the number and configuration of Tech-Prep consortia was determined at the local level by the coalescence of partners rather than by a state plan.

Formation of new consortia continues but is slowing

The total number of Tech-Prep consortia grew again in FY 1995, but the increase was smaller than in previous years. There were 1,029 established consortia in FY 1995, including 105 new consortia funded for the first time that year (FY 1995 grantees). These new consortia represented an increase of 11 percent over the 953 consortia in FY 1994. In contrast, the number of consortia grew 17 percent between FY 1993 and FY 1994 and by more than 50 percent between FY 1992 and FY 1993 (Table II.1).

TABLE II.1

NUMBER OF TECH-PREP CONSORTIA IN FISCAL YEAR 1995-1996, BY YEAR OF FIRST FUNDING AND STATE

State	Year of First Title IIIE Funding				Total in FY 1995
	FY 1992	FY 1993	FY 1994	FY 1995	
Alabama	18	5	2	0	25
Alaska	2	1	0	2	5
Arizona	10	3	0	0	13
Arkansas	8	1	0	5	14
California	0	67	17	0	84
Colorado	13	5	8	4	30
Connecticut	7	3	2	0	12
Delaware	1	0	0	0	1
District of Columbia	1	0	0	0	1
Florida	11	6	5	4	26
Georgia	30	24	22	15	91
Hawaii	1	0	0	0	1
Idaho	6	0	0	0	6
Illinois	29	0	0	10	39
Indiana	15	0	0	0	14
Iowa	7	0	7	0	15
Kansas	6	0	2	4	12
Kentucky	26	27	20	25	98
Louisiana	9	5	0	0	14
Maine	4	21	0	0	5
Maryland	16	0	0	0	16
Massachusetts	6	1	0	4	11
Michigan	39	0	0	0	39
Minnesota	18	5	3	0	26
Mississippi	6	8	1	0	15
Missouri	6	7	0	1	14
Montana	4	0	0	2	6
Nebraska	6	0	0	0	6
Nevada	3	1	0	0	4
New Hampshire	2	0	4	0	6
New Jersey	13	7	2	3	25
New Mexico	11	2	0	2	15
New York	14	14	2	0	30
North Carolina	31	17	9	1	58
North Dakota	1	0	0	0	1
Ohio	6	7	11	0	24

TABLE II.1 *(continued)*

State	Year of First Title IIIE Funding				Total in FY 1995
	FY 1992	FY 1993	FY 1994	FY 1995	
Oklahoma	6	4	0	8	18
Oregon	17	0	0	0	17
Pennsylvania	12	7	5	3	27
Rhode Island	1	0	0	0	1
South Carolina	16	0	0	0	16
South Dakota	0	4	0	0	4
Tennessee	14	0	0	0	14
Texas	21	4	0	0	25
Utah	5	3	1	0	9
Vermont	5	4	0	0	9
Virginia	3	23	0	1	27
Washington	10	7	4	1	22
West Virginia	6	1	3	1	11
Wisconsin	16	0	0	0	16
Wyoming	4	1	1	3	9
Puerto Rico	1	0	0	0	1
Virgin Islands	1	0	0	0	1
U.S. Total	**524**	**275**	**131**	**99**	**1,029**

SOURCE: Inventory of Local Tech-Prep Planning and Implemention, fall 1995

The new consortia were concentrated in a relatively small group of states. Three states (Georgia, Illinois, and Kentucky) accounted for more than half the new FY 1995 grantees.[1] No new consortia were funded in 33 states. Most of the remaining states added only one or two consortia that year.

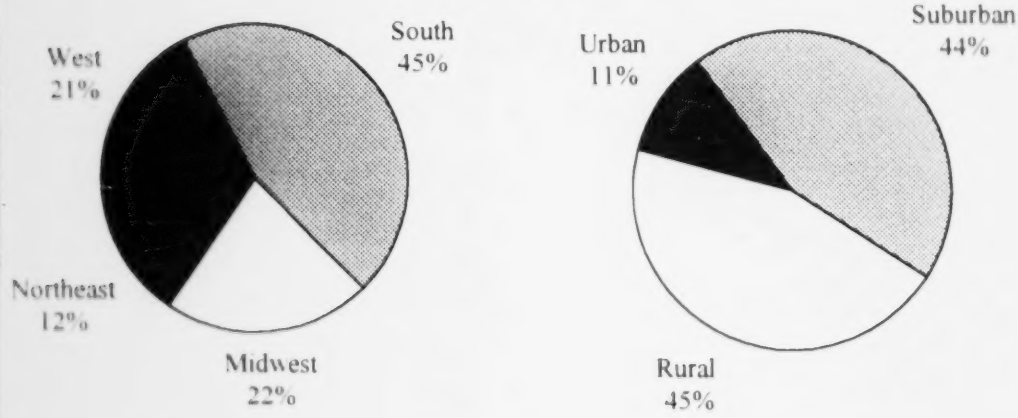
The decline in the number of new Tech-Prep grantees is not unexpected. The vast majority of consortia continue to be funded by their state agencies after the initial grant, leaving less funding available to be distributed to new consortia. Also, many states already include all or most of their school districts in existing consortia, leaving little room for expansion to new localities.

Consortia remain concentrated in the South

The addition of the new FY 1995 grantees did not significantly change the regional distribution of Tech-Prep consortia. Almost half of all Tech-Prep consortia are located in the South, with proportionally fewer in the West and Midwest (Figure II.1). The Northeast region of the country accounts for a small proportion of all consortia.

FIGURE II.1

GEOGRAPHIC DISTRIBUTION OF TECH-PREP CONSORTIA
(Percentage of Consortia)



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

[1]Illinois did not form new consortia in 1995, but distributed Title IIIE grants to consortia that had previously been supported only by state funds. These consortia were counted in the national Tech-Prep survey for the first time in fall 1995.

This distribution of consortia probably reflects regional differences in consortium composition and funding strategies, more than in the priority placed on Tech-Prep. Although many more consortia have been formed in the southern states, these consortia are smaller--that is, they include fewer school districts--than consortia in other regions. For example, more than three-quarters of consortia in Georgia, Kentucky, and North Carolina contain a single district, compared to about a third of consortia nationwide. On average, southern consortia include 5 secondary districts, while consortia in the Midwest include 15 districts, consortia in the Northeast include 11 districts, and those in the West include 6 districts.

Even allowing for differences in consortium size, Tech-Prep is still somewhat more prevalent in the South. Southern Tech-Prep consortia cover 65 percent of all secondary districts in that region, a proportion slightly higher than that of consortia in the Midwest and the West (about 62 and 58 percent, respectively). Consortia located in the Northeast included just under 50 percent of the region's districts. Thus, Tech-Prep is somewhat less prevalent in the Northeast than in the other three regions of the country.

Urban areas are as involved in Tech-Prep consortia as other areas

Urban communities are well represented in Tech-Prep consortia. Although there are fewer consortia in primarily urban communities, cities are at least as likely to be members of Tech-Prep consortia as are suburban or rural areas.

Examination of the geographic location of consortia might at first suggest that Tech-Prep is not prevalent in urban areas. Tech-Prep consortia that can be classified as urban represented only about 10 percent of all consortia in 1995 (Figure II.1).[2] Many more consortia have been established in rural and suburban areas (45 and 44 percent of all consortia, respectively). This distribution of Tech-Prep consortia is virtually unchanged over the past three years.

There are fewer urban Tech-Prep consortia, largely because the United States contains far fewer urban than suburban or rural districts. However, these urban communities are well represented in Tech-Prep consortia. Of all secondary school districts classified as urban, 74 percent belong to Tech-Prep consortia. In contrast, approximately 62 percent of suburban school districts and 55 percent of rural districts are members of Tech-Prep consortia. Thus, urban districts are even more likely than other types of districts to be included as members of a Tech-Prep consortium.

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[2]Urbanicity was determined on the basis of standard Metropolitan Statistical Area (MSA) code classifications available in the National Center for Education Statistics (NCES) Common Core Data. Each secondary district has a designated MSA code. In this report, we refer to central city MSA districts as urban districts, to non-central city MSA districts as suburban districts, and to non-MSA districts as rural districts. In consortia with multiple districts, we derived a "mean" urbanicity code by weighting each district's MSA code by its total secondary population. Thus, estimates of consortium urbanicity may contain some imprecision, because many consortia include secondary districts that span urban, suburban, and rural areas.

CONSORTIUM COVERAGE, MEMBERSHIP, AND LEADERSHIP

Tech-Prep consortia have spread, and include substantial numbers of institutions and organizations across many parts of the country. The "coverage" of these consortia is an important measure of how far Tech-Prep reforms could reach. The extent to which particular entities are involved in Tech-Prep--as members and as leaders--could play an important role in how Tech-Prep affects the learning experience of students.

The Tech-Prep Education Act stipulated in 1990 that Title IIIE grants be awarded to consortia composed of educational agencies serving secondary students and postsecondary institutions that award two-year degrees. The act also instructed state administering agencies to give special consideration to grant applications from consortia that "are developed in consultation with business, industry, and labor unions." In 1994, this statutory provision was amended to place additional priority on consortia that work with or include as members institutions of higher education that award baccalaureate degrees. However, the configuration of consortia--their size and governance--was left to be determined by state and local criteria.

The Tech-Prep legislation also leaves open the definition of "membership" in a consortium, and the extent of participation expected of the institutions that form consortia. The survey data and evaluation site visits suggest that some member school districts, postsecondary institutions, and employers play a strictly advisory role in consortium activities, or are counted as members because they fall within the geographically defined boundaries of the consortia. However, other consortia include as members only those entities and organizations that are actively engaged in planning and implementing aspects of Tech-Prep programs. Not all Tech-Prep consortium members participate in Tech-Prep to the same degree. Membership in a consortium reflects varying approaches to and levels of involvement in Tech-Prep implementation as well as different stages of development.

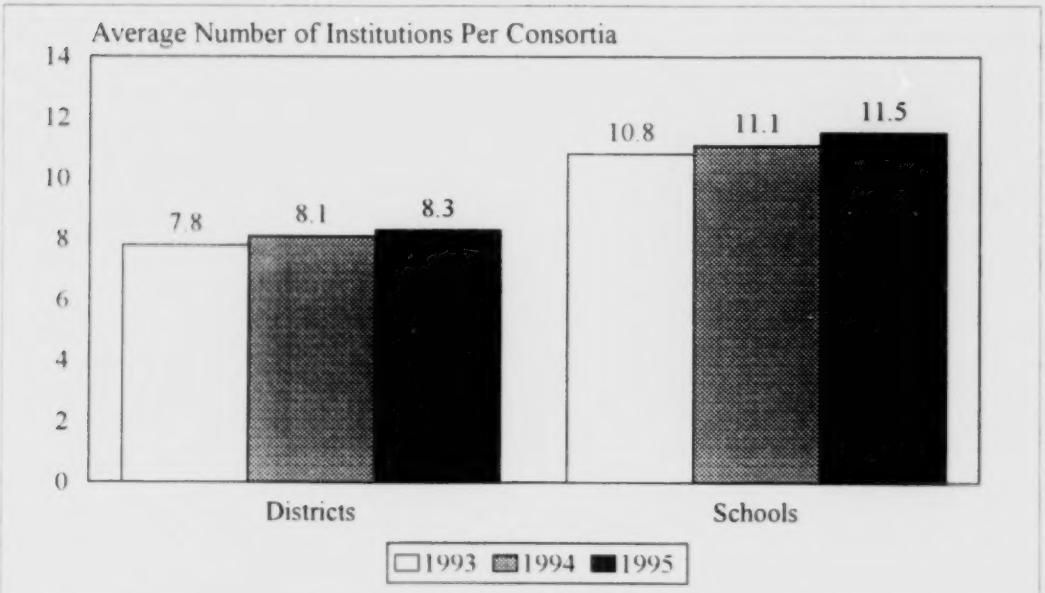
Consortia are growing larger as well as more numerous

The establishment of new Tech-Prep consortia since the early years of Title IIIE funding has been accompanied by an expansion in their size. The average number of secondary school districts included in Tech-Prep consortia rose to 8.3 in fall 1995, up from 8.1 in 1994 and 7.8 in 1993--a more than six percent increase over the three years (Figure II.2). The average number of secondary schools increased proportionally during that period.

The size of consortia appears to vary with their age. Newer consortia are significantly smaller (include fewer school districts) than older grantees. In fall 1995, consortia that had just received their first Title IIIE grant (FY 1995 grantees) included, on average, about 4 districts, while FY 1992 grantees include almost 11 school districts. It seems likely that many of the older consortia began as pilot projects and expanded as neighboring districts heard about Tech-Prep and original members had time to promote Tech-Prep ideas. Also, given the wide coverage of existing Tech-Prep consortia, the geographic areas (school districts) left to be incorporated into new consortia may be relatively small.

FIGURE II.2

AVERAGE NUMBER OF SECONDARY DISTRICTS AND SCHOOLS IN TECH-PREP CONSORTIA, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

Tech-Prep consortia include a substantial and increasing share of the nation's school districts

With the growth in the number and size of consortia since Title IIIE was introduced, these entities now include an even larger proportion of all secondary districts in the country than in previous years. Consortia responding to the fall 1995 survey reported more than 6,800 districts as members, or about 60 percent of all secondary school districts in the United States. These Tech-Prep districts account for 77 percent of all secondary students (grades 9 through 12). These figures suggest that districts in Tech-Prep consortia are large relative to those that are not members of consortia.

Overall, Tech-Prep district membership is even more widespread and has been growing each year. If we assume that consortia that did not respond to the survey have, on average, the same number of districts and students as responding consortia, Tech-Prep members would have covered 69 percent of all U.S. school districts and 88 percent of all secondary students in 1995 (Figure II.3).[3] In contrast, Tech-Prep districts accounted for 51 percent and 63 percent of all secondary districts in 1993 and 1994, respectively. Similarly, the share of all secondary students who are in Tech-Prep districts has also risen since 1993. Thus, the proportion of students who could potentially be influenced by Tech-Prep reforms has grown substantially.

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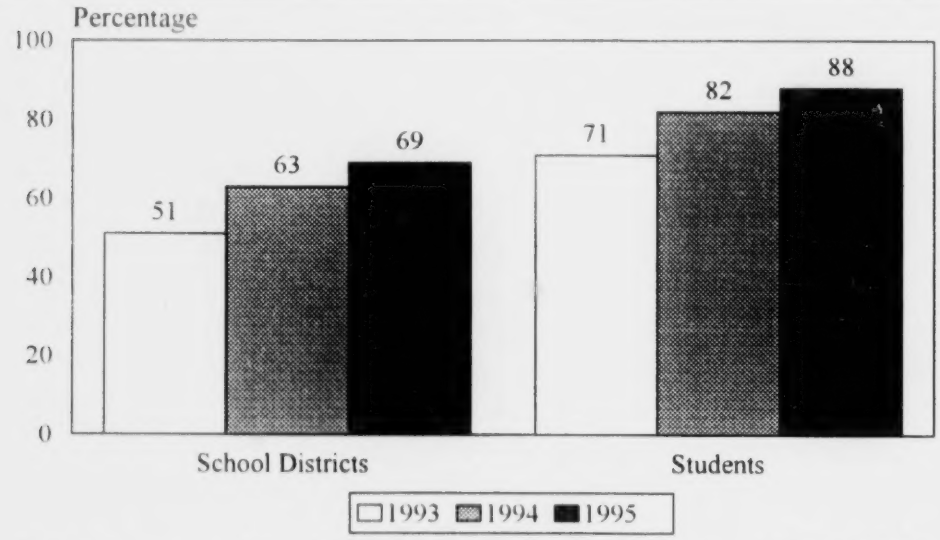
[3]Estimates were adjusted by dividing the computed percentage of secondary enrollment by the survey response rate.

FIGURE II.3

PERCENTAGE OF U.S. SECONDARY DISTRICTS AND STUDENTS INCLUDED IN TECH-PREP CONSORTIA, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

NOTE: Percentages are adjusted for response rate.

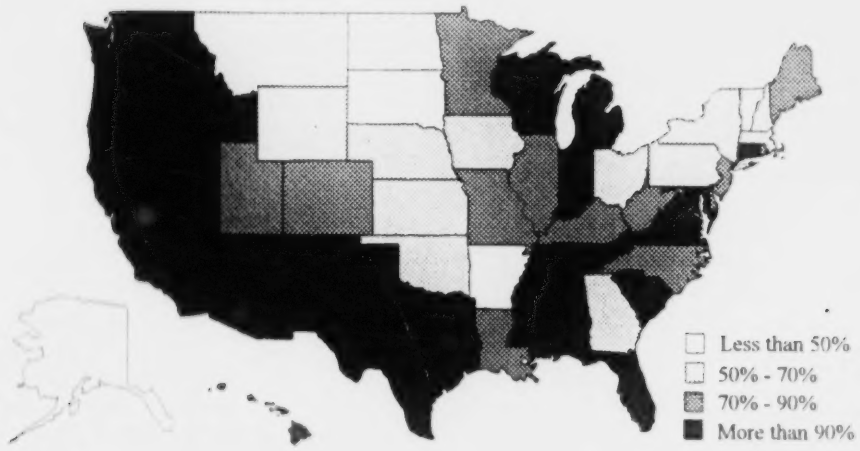
The percentage of secondary students included in Tech-Prep districts varies significantly across states. Estimates range from 13 percent to 100 percent in 1995 (Figure II.4). Consortia in 23 states cover at least 90 percent of their states' secondary student population, although four of these are single-consortium states that, by definition, include all secondary districts. Variation in other states' Tech-Prep coverage depends largely on differences in the number and size of consortia awarded Title IIIE grants. For example, Arizona and Arkansas funded a similar number of consortia for 1995-1996 (13 and 14, respectively), but the Arkansas consortia have fewer districts and include less than 45 percent of the secondary student population in the state, compared with almost 91 percent in Arizona. Growth in Tech-Prep coverage has also been uneven across states, influenced mostly by each state's starting point. California, Minnesota, and Mississippi experienced the greatest increases between 1993 and 1995.

More junior high and middle schools are members of Tech-Prep consortia

Although secondary students have been the focus of the Tech-Prep legislation, many Tech-Prep communities have increasingly viewed the earlier school years as an important foundation for the success of the initiative. Site visits to selected Tech-Prep consortia and discussions with state coordinators suggest that some junior high and middle schools are beginning to offer career awareness activities that help students make choices of Tech-Prep programs of study in high school. In fall 1995,

FIGURE II.4

PERCENTAGE OF U.S. SECONDARY STUDENTS INCLUDED IN TECH-PREP CONSORTIA, BY STATE



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.
NOTE: Estimates were adjusted for response rates.

more than half (52 percent) of all Tech-Prep consortia included junior high or middle schools as members, compared to 46 percent a year earlier. The average number of these schools included in consortia also rose, from 3.4 in 1994 to 4.2 in 1995.

Postsecondary membership in Tech-Prep consortia has also expanded

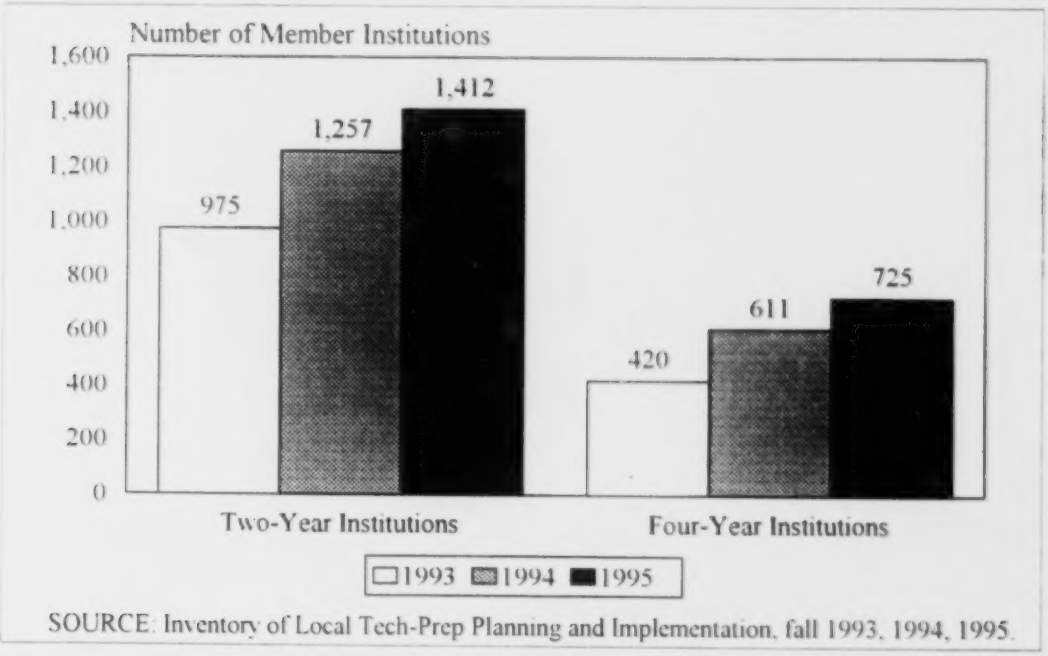
Growth in the number of postsecondary consortium members has been substantial. Colleges, particularly community or technical colleges, often serve as the fiscal agent for Tech-Prep consortia and in many cases provide coordination and leadership. About half the respondents to the consortium survey each year are located at community colleges.

Postsecondary involvement has increased even beyond the simple growth in the number of consortia. Between 1993 and 1995, the number of Tech-Prep consortia rose by about 30 percent, while community college membership in consortia increased by 44 percent, from 975 to about 1,400 (Figure II.5). These figures suggest that some consortium school districts are now working with more community colleges than they did earlier.

The 1,400 two-year postsecondary Tech-Prep members reported is roughly equivalent to the total number of two-year institutions of higher education in the country, most of which are public community colleges. While some community colleges are members of more than one consortium,

FIGURE II.5

POSTSECONDARY INSTITUTIONS IN TECH-PREP CONSORTIA, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

the figures still suggest that most community colleges are at least tangentially involved in Tech-Prep as members of consortia.

Consortia are also expanding to include more four-year institutions. This is an important development, because one concern often voiced by teachers and parents about Tech-Prep is that it does not adequately establish paths beyond community colleges to higher degree programs.

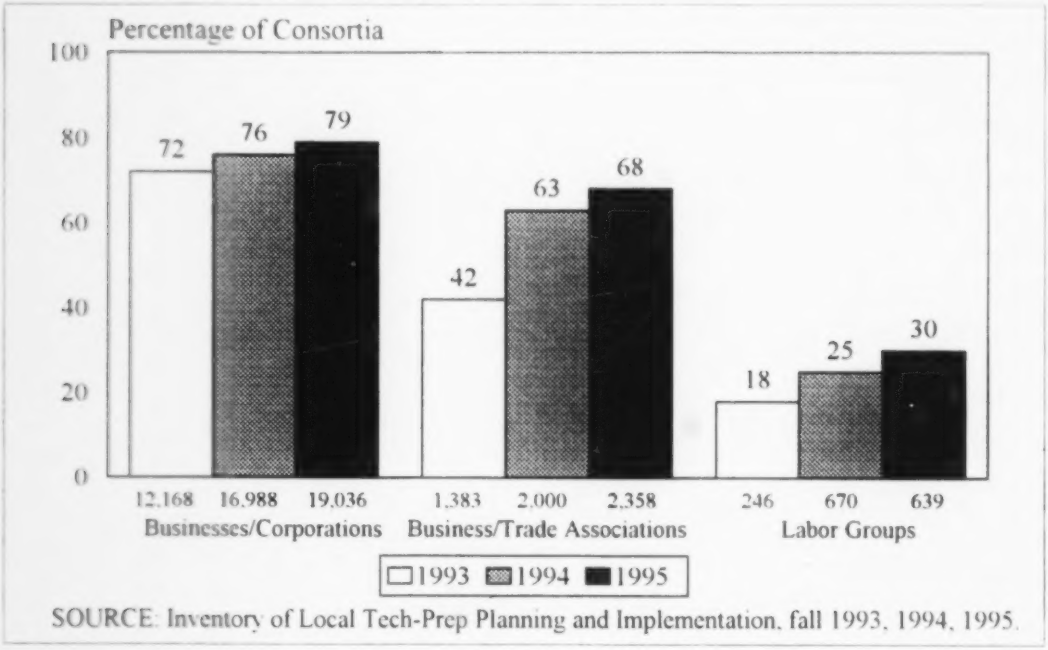
Inclusion of business, industry, and labor groups has grown

Businesses and labor groups are widely, and increasingly, identified as consortium members (Figure II.6). Consortia were somewhat more likely to include businesses or corporations in 1995 (79 percent) than they were in 1994 (76 percent) or 1993 (72 percent). Higher proportions of consortia also reported business/industry associations and labor unions as members in 1995 than in previous years.

The reported number of consortium business members grew sharply between 1993 and 1995. Partly, the increase in the total number of businesses involved in Tech-Prep is attributable to the addition of new consortia and their business partners. However, the growth in business involvement, as well as the absolute numbers reported, call into question how consortia interpreted business "membership" in responding to the survey. The average number of businesses included in Tech-Prep consortia

FIGURE II 6

BUSINESS AND LABOR MEMBERSHIP IN TECH-PREP CONSORTIA, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

doubled, from 19.6 in 1994 to 41.0 in 1995. This substantial increase was due to the addition of new business members reported by older consortia, rather than to a large number of business partners reported by new consortia. Consortia first funded in FY 1992 and FY 1993 indicated an increase in their business membership in the past year by an average of close to 30 businesses.

Such large increases over a single year are likely a reflection of both the ambiguity in what it means to be a member of a consortium and the recent interest among consortia in documenting business participation. It seems likely that firms with representatives who sit on Tech-Prep governing boards, provide internship positions for Tech-Prep students, or simply release a single employee to participate in a career day may all have been included in the counts provided. There is also evidence that some consortia counted all business members of their local chamber of commerce as consortium members, regardless of their actual participation in Tech-Prep activities. Pressure to show high levels of business involvement in 1995 is probably due to interest among Tech-Prep communities in obtaining grant funds under the School-to-Work Opportunities Act (STWOA).

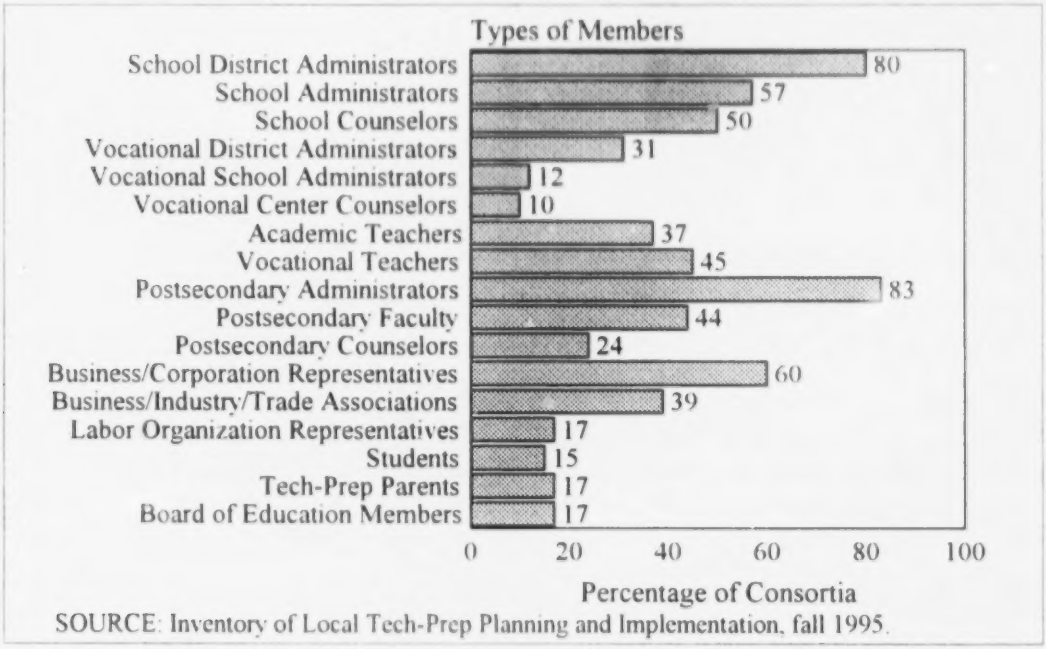
Business and labor participate less in consortium leadership than do educational institutions

Most Tech-Prep consortia--about 90 percent-- have a governing board or equivalent decision making body that oversees Tech-Prep planning and implementation. Governing boards generally include secondary educational agencies and postsecondary institutions--Tech-Prep partners required by the

legislation (Figure II.7). However, some other types of consortium members are underrepresented on these boards. For example, although close to 80 percent of consortia count businesses as consortium members, only 60 percent include business representatives on their boards. Labor groups, considered members of about one third of all consortia, participate in Tech-Prep governance in only 17 percent of consortia. The composition of governing boards has not changed significantly during the years of Tech-Prep funding.

FIGURE II.7

REPRESENTATION IN TECH-PREP GOVERNANCE: PERCENTAGE OF CONSORTIA WITH ANY BOARD MEMBERS FROM EACH GROUP



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

Secondary representation is consistent across consortium and governing board membership. Secondary districts and schools dominate Tech-Prep governing boards. Although secondary and postsecondary staff are equally likely to be included on boards (89 percent and 86 percent of consortia, respectively), secondary school staff are represented in greater numbers. Tech-Prep governing boards in 1995 included an average of 12 secondary school staff and 4 staff members of postsecondary schools. In contrast, the average number of business representatives on these boards was 3.4.

Tech-Prep governance structures have evolved

Many Tech-Prep consortia have made changes in their governance or leadership structures. The committees or councils that were responsible for many Tech-Prep initiatives in 1993 were different from those in operation in 1995. In fall 1993, about 80 percent of consortia reported that their governing boards had been established prior to the receipt of their first Title IIIE grant--in some cases, several years before Tech-Prep funds were available. In contrast, in 1995, the same proportion of consortia reported having formed a Tech-Prep governing board after receiving their first grant. Among consortia that responded in both years of the survey, nearly half changed the dates for when their governing boards were established, suggesting that new boards had been created. The survey data and evidence from site visits suggest that many of the 1993 reports were referring to regular school district boards or councils that oversee all secondary education issues, including but not limited to Tech-Prep. More-recent movement toward workforce development boards or school-to-work (STW) committees in many communities may have broadened and replaced what were previously councils focused exclusively on secondary education or on Tech-Prep.

CONSORTIUM RESOURCES

Most consortia need resources--funding and staff--to facilitate communication and coordination among consortium members, encourage professional development, develop articulation agreements and new curricula, and promote the initiative to students, teachers, employers, and parents. These resources may be provided by federal grants--including new grants available under the STWOA--as well as state budgets, redirection of local expenditures, and any combinations of these funds.

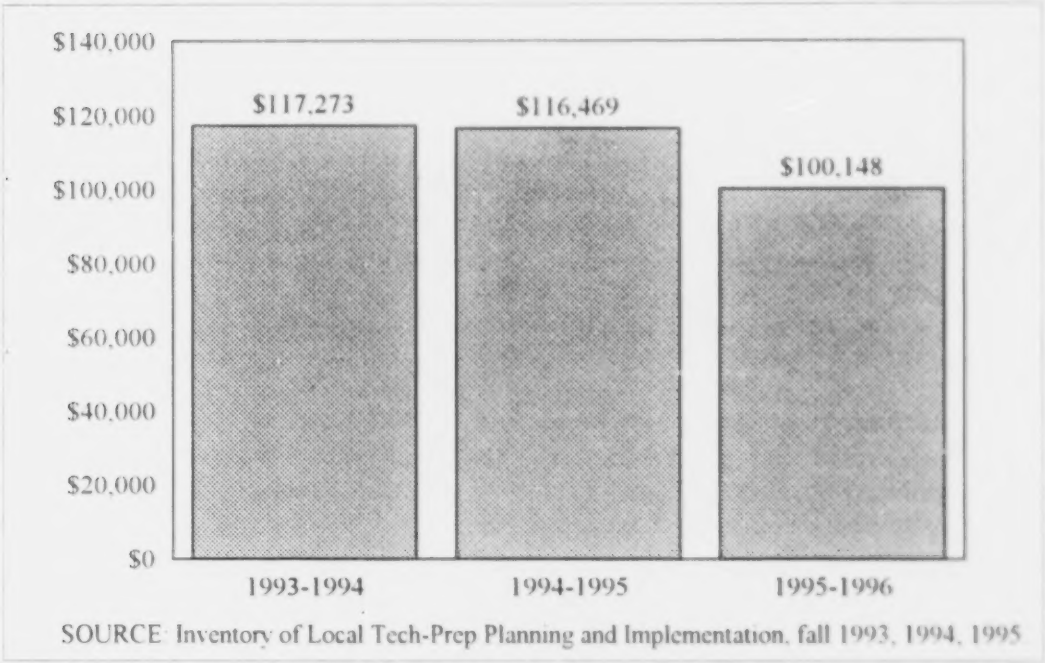
Consortia are increasingly operating with less Title IIIE funding

Average annual Tech-Prep grants received by local consortia have been shrinking, even as the size of consortia has been increasing. The average consortia grant was $100,148 in fall 1995, down from $116,469 in fall 1994 and $117,273 in fall 1993 (Figure II.8). This represents an overall decrease of about 14 percent in the average grant amount awarded between school year 1994-1995 and school year 1995-1996.

There are several possible explanations for the decline in overall Tech-Prep grant amounts. First, the number of consortia increased by 11 percent during that one-year period, but Title IIIE funds increased by only about 4 percent. Unless state agencies made up for the difference by retaining less Title IIIE funding for state-level activities, funds available for local grants had to be more constrained than previously. Second, state agencies may be reducing Title IIIE grants to encourage established consortia to find alternative sources of funding. Policies planned in some states would require consortia to incorporate Tech-Prep expenditures into their regular district budgets and become self-supporting eventually. States might also perceive a decreased need for support as consortia gain operational experience. Once a consortium has been in operation for several years, the costs associated with start-up activities, such as developing new curricula or articulation agreements, may decline.

FIGURE II 8

AVERAGE AMOUNT OF TITLE IIIE GRANT, BY GRANT YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995

Newer consortia receive less Title III money than older consortia

The decline in the average grant amount is due primarily to the significantly smaller grants made to the newest consortia, rather than to a large reduction in grants to existing consortia. State agencies award larger grants to more-established consortia. For the 1995-1996 school year, the newest consortia (those first funded in FY 1995) received an average Title IIIE grant of only $65,959, compared to $110,543 for those first funded in FY 1992. Two factors account for this difference. Newer consortia are more likely to be in the planning rather than the implementation stage of Tech-Prep development. Also, FY 1995 grantees are smaller (include fewer school districts) than the older consortia, and some states' funding formulas take such factors into account.

Most consortia continue to receive Title IIIE funding once awarded a first grant

Very few consortia are denied continued funding by state agencies. Only eight percent of all consortia that had ever received Title IIIE grants since FY 1993 did not receive such funding for FY 1995, according to state Tech-Prep coordinators. Among the consortia that responded to the survey, about

six percent did not receive a grant that year.[4] These unfunded consortia are concentrated in just a few states, with Kentucky, North Carolina, and Georgia accounting for more than 80 percent.

Among consortia that no longer receive Title IIIE funding, some are still continuing their Tech-Prep activities. More than two-thirds (68 percent) of the consortia that did not have Title IIIE funding for school year 1995-1996 responded to the survey in fall 1995. Of these unfunded respondents, 53 percent reported having Tech-Prep students enrolled in career-focused programs of study that year.

Fewer than half of consortia report receiving funding from other sources

Most consortia rely solely on Title IIIE grants for consortium-wide Tech-Prep activities. Nearly 60 percent of consortia that reported receiving any funding for FY 1995 claimed Title IIIE grants as the only source. Older consortia are more likely than newer consortia to receive funds from other sources. More than half of those consortia first funded in FY 1992 received funds from other sources, compared to only 28 percent of those consortia that received their first grant in FY 1995. However, the sources of additional funding were usually in the form of other federal and state grants. Thus, the difference suggests that older consortia are more sophisticated in assembling federal and state resources for their Tech-Prep activities, not that they are moving toward local funding for Tech-Prep.

Perkins Title IIC and state funds are the most common sources of supplemental support for Tech-Prep development. Overall, 13 percent of consortia received funding from Perkins Title IIC, and another 13 percent received state funds to support their Tech-Prep activities (Figure II.9). Local funds for Tech-Prep were received by 11 percent of consortia.

Although overall Title IIIE grant amounts have fallen, funding from other sources has been increasing and helped raise overall levels of support. Average funding from all sources for FY 1994-1995 was $187,990, up 12 percent from FY 1993-1994 funding levels. The largest source of this increase is non-Perkins state funding, which increased from an average of $8,220 in FY 1994 to $29,543 in FY 1995. Other Perkins Act funds and local funds increased substantially as well. Finally, grants awarded under STWOA also contributed to overall funding support that is counted by some consortia as helping the continued development of Tech-Prep.

An increasing number of consortia receive STWOA grants

STWOA funding is intended to assist states and communities in broadening earlier education reform efforts such as Tech-Prep into the comprehensive model outlined in the new legislation. At the local level, STWOA funding can be obtained in three ways: as a direct grant from the national School-to-Work Office, as a substate grant under a state implementation grant, or as an early planning grant under a state development grant. These local grants may be awarded to partnerships of institutions

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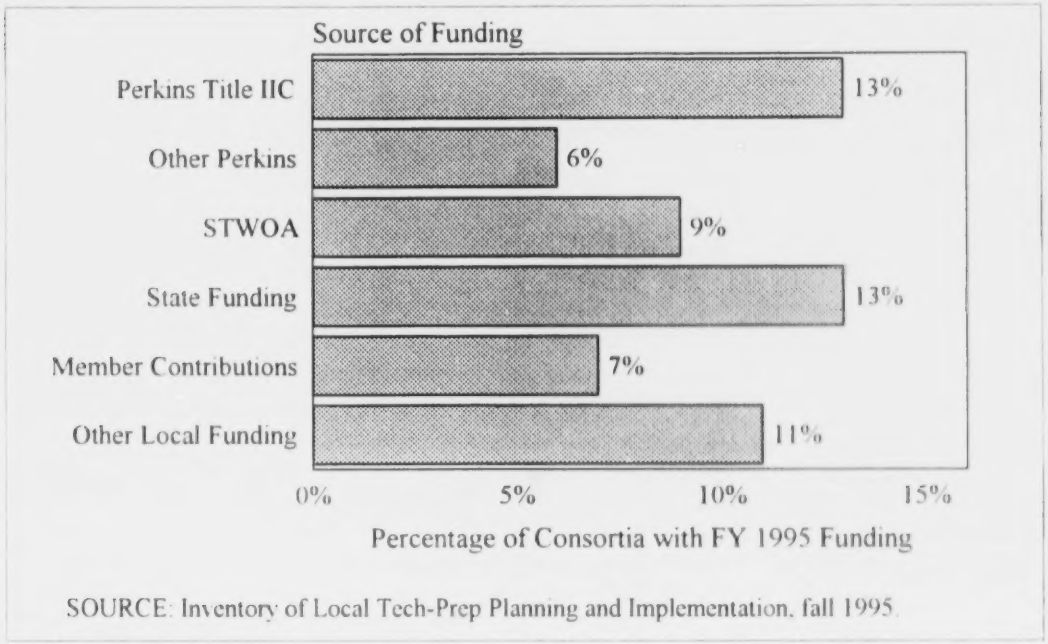
[4]Not unexpectedly, nonresponse was higher among unfunded consortia than overall. The overall response to the fall 1995 survey was 87 percent, but only 68 percent among consortia that did not receive a Title IIIE grant that year.

FIGURE II.9

PERCENTAGE OF CONSORTIA WITH FUNDING OTHER THAN TITLE IIIE FOR FY 1995, BY SOURCE



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

and organizations that are identical in composition to an established Tech-Prep consortium, include a subset of a consortium's members, or encompass members of multiple Tech-Prep consortia.

More Tech-Prep consortia or subsets of their member school districts received STWOA grants in 1995 than in 1994. More states had received implementation grants under the act by 1995, and more communities had been awarded grants directly from the national School-to-Work Office. Members of Tech-Prep consortia were the recipients of some of these grants. More than a third of consortia (311) reported receiving STWOA grants for FY 1996, up from 22 percent (191 consortia) a year earlier. Most of these STWOA grants were awarded by state agencies (87 percent of consortia receiving STWOA funds), but 14 percent came directly from the federal government. A few of these consortia reported receiving STWOA funds from both substate grants and direct federal grants.

The similarity in district membership of STW partnerships and Tech-Prep consortia increased between 1994 and 1995. About 51 percent of the 311 consortia with STWOA funding in fall 1995 reported that the STW grants covered only a subset of their consortium districts, compared with 62 percent of the consortia with STWOA funding in fall 1994. The extent of common coverage by STWOA and Title IIIE grants grew. Among Tech-Prep consortia that reported having STWOA grants in 1994, only about 20 percent of their districts (549 out of 2,568) were covered by those grants. By 1995, 38 percent of the districts in Tech-Prep consortia with STWOA grants were covered by the grants.

Local grants under the STWOA appear to be less generous than those under Title IIIE. Among consortia that received both kinds of grants for FY 1996, the average amount received for their members under the STWOA was $22,434, in contrast to $78,137 from Title IIIE.

Uses of overall consortium funds have not changed significantly from previous years

Patterns of expenditures by Tech-Prep consortia were virtually identical in 1993, 1994, and 1995. In each year, on average, just under one-quarter of all Tech-Prep consortium resources were spent on each of three categories of activity: (1) general coordination of consortium efforts, (2) staff development, and (3) equipment and materials for Tech-Prep programs. The remaining one-quarter was used primarily for curriculum development (about 16 percent), with the rest of expenditures divided among marketing, evaluation, and other activities. About six percent of consortium funds are allocated directly to consortium members for their use in developing Tech-Prep.

As was true in previous years, consortium size may influence spending patterns. Larger consortia--those with more member schools--spend greater proportions of their funds on general coordination and less on equipment and materials than do smaller consortia. Larger consortia also allocate more money directly to member institutions, who then may use these funds to purchase equipment or pursue other Tech-Prep activities.

III. APPROACHES TO PROMOTION OF TECH-PREP AND STAFF DEVELOPMENT

Consortium staff often describe marketing efforts and professional development as vital components of Tech-Prep development. Tech-Prep initiatives ideally encourage new forms of collaboration between academic and vocational teachers, secondary and postsecondary education staff, and educators and employers, leading to new learning experiences for students. To achieve this objective, the Tech-Prep concept must first be "sold" successfully to its stakeholders--teachers, counselors, school administrators, business, industry, labor, parents, and students--to promote acceptance and involvement. Implementing the reforms often requires training staff to undertake new roles and responsibilities. The Tech-Prep Education Act underscores the importance of these components by specifying that all Tech-Prep programs include in-service training for teachers and counselors.

Consortia continue to engage in a variety of promotional activities

Most consortia try to encourage interest in and acceptance of Tech-Prep on an ongoing basis. However, many face a substantial challenge in involving teachers and counselors in Tech-Prep and in recruiting students to participate in Tech-Prep programs--the stigma associated with career preparation programs. Consortia frequently report that negative perceptions of vocational education and Tech-Prep are a barrier to Tech-Prep development (see Chapter VI). Most consortia attempt to overcome this barrier by organizing promotional, informational, and awareness activities.

Marketing Tech-Prep is therefore an important effort for most consortia. In fall 1995, 90 percent of consortia reported having engaged in some Tech-Prep promotional activity during the preceding school year. This proportion is consistent with consortium reports from the 1993 and 1994 surveys (85 percent and 88 percent, respectively). However, newer consortia were less likely than more-established consortia to market Tech-Prep, perhaps because they were still planning their initiative and not yet recruiting either teachers to implement new curricula or students to participate.

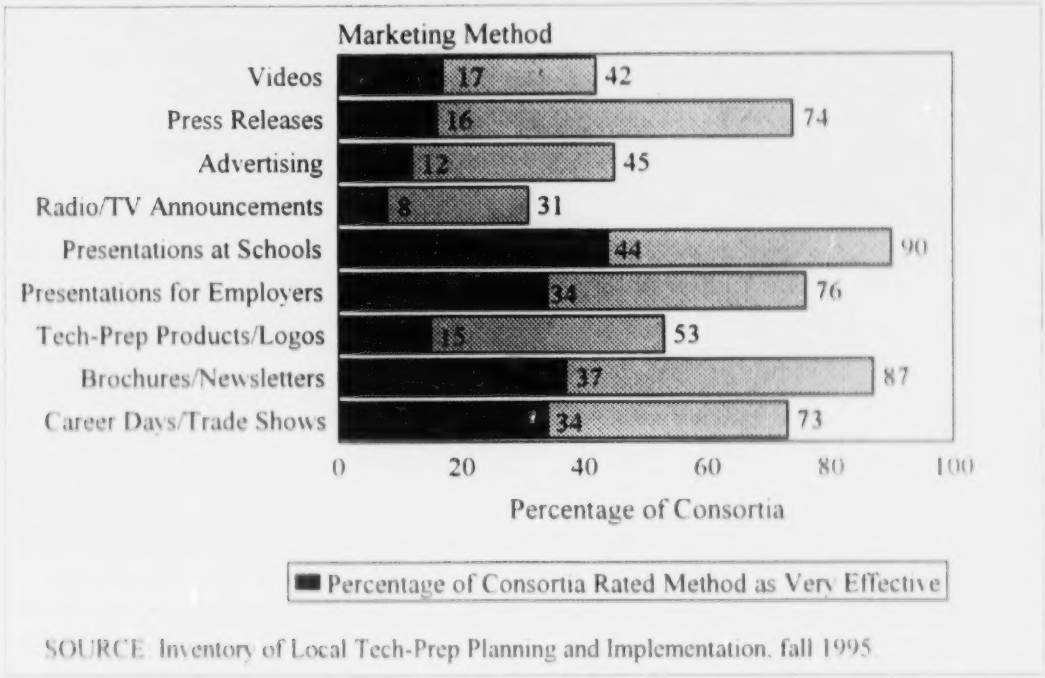
Consortia used a variety of marketing techniques to promote Tech-Prep. Nearly all consortia used multiple promotional methods, most commonly presentations, brochures, and newsletters. Patterns of use of these methods has remained relatively consistent between 1993 and 1995.

Presentations are the most frequently used method for promoting Tech-Prep, as well as the method most often rated as effective (Figure III.1). During the 1994-1995 school year, 90 percent of consortia gave presentations about Tech-Prep at secondary or postsecondary schools, and 76 percent gave presentations for employers or other audiences. These two types of presentations are rated as very effective by 44 percent and 35 percent, respectively, of all consortia.

Several promotional tools are nearly as widely used as presentations. More than three-quarters of consortia rely on press releases, career days, and brochures or newsletters to distribute information about Tech-Prep. Career days and brochures or newsletters are reported as highly effective marketing methods by about 35 percent of all consortia. Press releases and other forms of media advertising are reportedly less effective. Announcements and appearances on radio and television are used by about

FIGURE III.1

MARKETING METHODS USED BY TECH-PREP CONSORTIA



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995

one-third of consortia, significantly less so among urban consortia, where news media are probably less accessible and affordable than in rural and suburban areas.

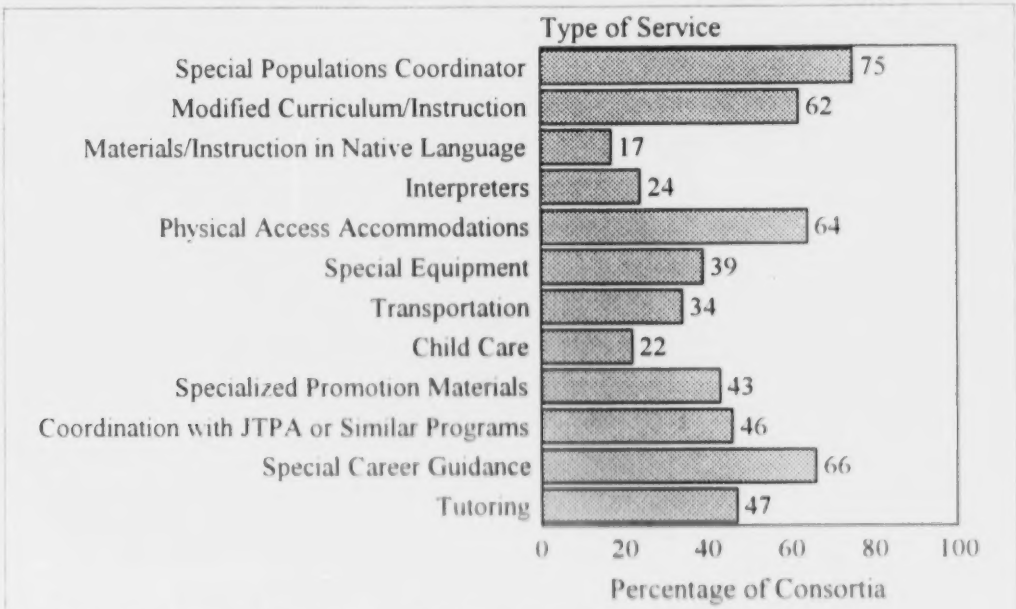
Almost all consortia take steps to increase access of special populations to Tech-Prep

Just over 90 percent of consortia reported instituting specific measures to facilitate access to Tech-Prep activities by members of special populations groups--minorities, disadvantaged students, students with disabilities, pregnant or parenting students, and students with limited English proficiency. The Perkins legislation mandates that localities ensure these groups' complete access to all programs funded under the act. Therefore, the high proportion of Tech-Prep consortia taking these steps is not surprising. The survey data do not allow us to determine the prevalence of these services in consortium schools, however.

Consortia used a variety of services or accommodations to increase access to Tech-Prep (Figure III.2). In the 1995-1996 school year, the most frequently reported approach (taken by three-quarters of all consortia) was the inclusion of a special populations coordinator on the Tech-Prep team or in curriculum and staff development activities. Close to two-thirds of all consortia reported either modifying curriculum content or instructional methods or providing special career guidance to meet the special needs of a particular group, although the nature of these modifications cannot be discerned from the survey data.

FIGURE III.2

USE OF SERVICES OR ACCOMMODATIONS TO FACILITATE SPECIAL POPULATION ACCESS TO TECH-PREP



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

For the most part, the emphasis on particular services or accommodations has not changed between 1993 and 1995. Approximately the same proportions of consortia reported relying on each measure in 1993, 1994, and 1995. However, consortium use of physical access accommodations increased over the three years (from 56 percent to 64 percent), as did use of special equipment to meet needs of a particular group of students (from 33 percent to 39 percent). This change may reflect increased national attention to the objectives of the Americans with Disabilities Act and the debate over the impending changes to the Individuals with Disabilities Education Act (IDEA).

Professional development remains a central part of Tech-Prep efforts

Arranging staff development opportunities is a major focus of consortium activity and resources. This emphasis reflects both the need for training to help faculty and other staff implement Tech-Prep reforms and the scarcity of professional development resources in many districts' budgets. Almost all consortia (99 percent) reported conducting staff training activities related to Tech-Prep during the 1994-1995 school year and the two previous years. Staff development continues to be one of the largest categories of spending by Tech-Prep consortia, accounting for an average of just under one-quarter of all consortium expenditures each year.

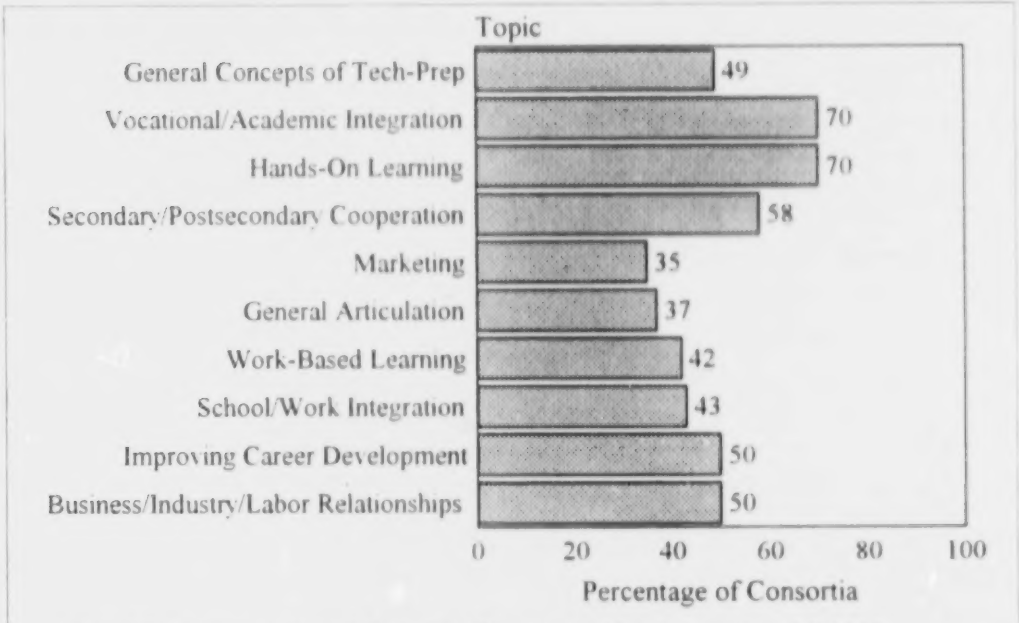
Staff from a variety of consortium members have received training on Tech-Prep topics. Training has focused most on consortium and secondary school staff; virtually all consortia (99 percent) included secondary administrators, teachers, and counselors in professional development activities during the 1994-1995 school year. More than 90 percent of consortia also included postsecondary staff in these activities. Vocational teachers are somewhat more likely than academic teachers to be involved in staff development related to Tech-Prep.

Staff development on basic Tech-Prep components is less common

Some traditional Tech-Prep topics are covered in professional development less often than in earlier years. Significantly fewer consortia rated the general concepts and strategies of Tech-Prep as a focus of staff training in 1995 than they did in 1993 or 1994 (Figure III.3). Similarly, emphasis on promoting cooperation between secondary and postsecondary faculty was less likely to receive attention in 1995 than in the earlier years. Declining interest in these topics probably reflects the later stage of development of many consortia. In the early years of Tech-Prep funding, most consortia were unfamiliar with the basic approach to Tech-Prep, including how to help secondary and postsecondary staff to work together. Several years later, however, many of these same consortia, having introduced consortium members to these concepts, have moved on to staff development focusing on more advanced or specialized elements of Tech-Prep.

FIGURE III.3

MOST EMPHASIZED STAFF DEVELOPMENT TOPICS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

Training on school-to-work topics is prominent and increasing

Many of the key features of STW systems are frequent subjects of Tech-Prep professional development. On the school-based learning side, integration of academic and vocational education and hands-on, contextual learning--two curriculum reforms promoted by both STWOA and the Tech-Prep Education Act--remain most widely cited as emphasized staff development topics (Figure III.3). Improving career development counseling was a key topic in about half the consortia in the 1994-1995 school year, up somewhat from 45 percent of consortia in the previous year.

The work-based learning aspects of STW have received increasing attention as part of Tech-Prep staff development. More than 40 percent of consortia reported emphasizing the topic of work-based learning in 1995 training activities, compared to only 29 percent in 1994. Improving the integration of school-based and work-based learning was cited as a key staff development topic by 43 percent of consortia in 1995, compared to 31 percent in 1994. The increased prominence of these topics--outside the traditional Tech-Prep domain--reflects efforts by some Tech-Prep consortia to adopt elements of STWOA.

Most consortia report offering faculty opportunities for workplace exposure

One approach to integrating school-based and work-based learning involves exposing school staff to the general or technical requirements of employer workplaces. This strategy has been adopted to at least some extent by many Tech-Prep consortia. In the 1994-1995 school year, 87 percent of consortia provided teachers, counselors, or administrators with some opportunity to interact with employers either at school or at a worksite. A slightly lower proportion of consortia (82 percent) reported providing similar experiences for school staff in the previous year. The true extent of these activities is unknown, however, because consortia were not asked to document the number of districts or schools in which the activities took place, the number of staff involved, or the frequency of the activities.

Consortia report using a variety of methods to encourage interaction between school and employer staff. The most common approach is through school staff participation on vocational-technical advisory committees where employers are represented; 79 percent of consortia provided these opportunities in school year 1994-1995 (Table III.1). Similar proportions of consortia reportedly involved school staff in visiting employer worksites, participating in conferences with employers, or bringing employers into classrooms to teach.

Consortia and their member schools generally involved multiple kinds of staff in these experiences. Vocational teachers participated most frequently. However, academic teachers and administrators, vocational administrators, and counselors also participated in workplace visits, internships, conferences, and other activities that allowed them to interact with employers. In 60 percent of the consortia that provided workplace exposure opportunities, all five types of school personnel reportedly participated in conferences or workshops with employers.

TABLE III.1

METHODS USED TO FAMILIARIZE SCHOOL STAFF WITH EMPLOYERS AND WORKPLACES, BY TYPE OF METHOD AND TYPE OF STAFF

	Academic Personnel		Vocational Personnel		
	Teachers	Administrators	Teachers	Administrators	Counselors
Visits to Work Sites	61.0	42.9	71.8	49.6	53.8
Internships at Work Sites	31.0	7.7	37.1	10.0	18.1
Individual Meetings with Employers	40.0	42.5	59.8	53.7	42.4
Employers Attend Board Meetings	45.9	55.4	56.3	59.4	48.2
Employers Attend Vocational-Technical Advisory Committees	41.9	45.9	73.7	69.3	49.1
Employers Speak in Classrooms	61.3	22.5	73.0	29.2	34.7

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

IV. THE CORE FEATURES OF TECH-PREP

The primary components of Tech-Prep were laid out in Title IIIE of the Perkins Act (summarized in Chapter I). Within these guidelines, however, the Act leaves room for differing interpretations and implementation approaches. For example, consortia differ in the extent to which they emphasize particular Tech-Prep components and group them together in a program of study. In addition, some consortia have incorporated into their Tech-Prep initiatives features not called for in Title IIIE but complementary to the goals of Tech-Prep. Increasingly common is work-based learning, as promoted by STWOA. As a result of these different strategies, what is called "Tech-Prep" has come to describe a variety of educational reforms. Any assessment of Tech-Prep development must therefore examine the full range of program features.

At its core, the Tech-Prep Education Act stresses the importance of linking occupational and academic instruction to prepare students for career-oriented postsecondary study and later employment. Title IIIE stipulates that Tech-Prep curricula should give students technical preparation and "build student competence in mathematics, science, and communications (including through applied academics) through a sequential course of study" that has an occupational focus. Each Tech-Prep program of study must consist of at least the last two years of high school and two years of postsecondary education leading to a two-year degree or certificate or to a higher-level credential. The legislation also emphasizes articulation agreements to promote collaboration between secondary and postsecondary institutions in curriculum development, and to provide students with a "nonduplicative sequence of progressive achievement leading to competencies." Consortia are expected to provide "preparatory services," such as career development, to ensure that participants can appropriately make the choice of and succeed in Tech-Prep programs.

This chapter describes these primary school-based features of Tech-Prep, as well as the work-based elements that are increasingly available to Tech-Prep students. First, we examine the overall Tech-Prep program models that consortia report they are working to implement. Because Tech-Prep initiatives are diverse, the chapter then includes a discussion of many of the common components, including career development and guidance, programs of study, applied curricula, secondary-postsecondary articulation, skill certificates, and workplace opportunities.

PROGRAM MODEL

The Perkins Act lays out a framework of Tech-Prep program components, but local consortia are implementing many variations on the original "2+2" model. Some interpretations of Tech-Prep include features that begin in the 9th or 10th grade (as encouraged by the amendments to Title IIIE in 1994) or even in middle school, and some view Tech-Prep as an education sequence that extends beyond community college to a baccalaureate degree. Not all consortia are developing Tech-Prep as a distinct program of study, with a consistent, defined set of activities in which all participating students are involved at some time--what we call a "core program."

Divergence from the original model reflects several factors. First, local planners may decide to extend Tech-Prep features to a broader range of students (such as those interested in four-year postsecondary degrees). Operational experience suggested to some consortia the need for greater career awareness among younger students, who will need to choose from among Tech-Prep and other programs

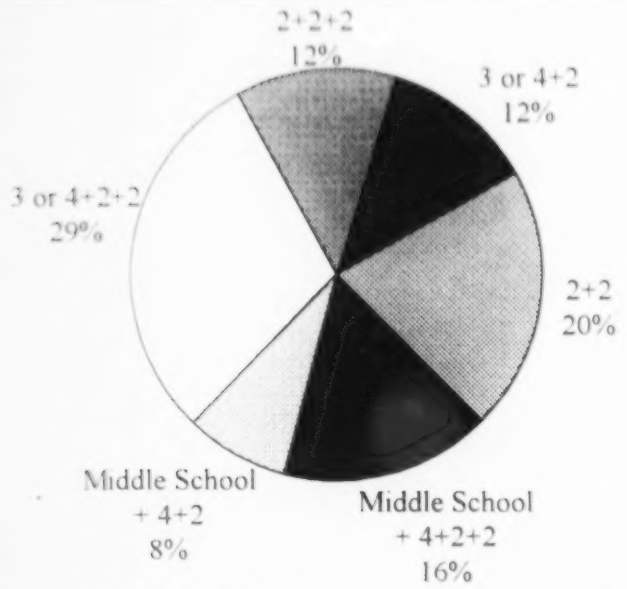
of study in high school. Some communities explicitly reject the notion of Tech-Prep as a separate program for a select group of students; instead, they are developing particular components of Tech-Prep more broadly rather than trying to link Tech-Prep components together for a particular group of students. Finally, observed differences from the original program model may simply reflect the early stage of development of Tech-Prep in some communities. For example, consortia may need to work on implementing specific components individually, before they can offer them together as part of a cohesive program of study.

Tech-Prep described as ultimately spanning many grade levels

Most consortia in 1995 reported ambitious plans for Tech-Prep that they expect will affect more grade levels than the "2+2" program originally defined in the Perkins legislation (Figure IV.1). In response to a question about the program model they are "working to implement," 65 percent of consortia reported that at least some of the early high school years (10th grade and possibly 9th grade) are included in their conception of Tech-Prep. Just over a third of these consortia (24 percent of consortia overall) reported that their Tech-Prep initiatives begin even earlier in students' educational experience--at some time in middle or junior high school. Many consortia (57 percent) describe their model as including options for further study in an articulated program at a four-year postsecondary institution, even though only half of them reported having a four-year institution as a consortium member.

FIGURE IV.1

TECH-PREP PROGRAM MODELS IN PROGRESS
(Percentage of Consortia)



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

The reported wide scope of Tech-Prep programs probably reflects the ambiguity involved in defining a cohesive sequence of activities that inevitably builds on existing courses and initiatives. Many types of activities either meet the overall objectives of Tech-Prep or are important foundations for implementing Tech-Prep programs. For example, even though middle school efforts are not funded by Title IIIE, some consortia consider career awareness activities in grades 6 through 8 to be part of their overall Tech-Prep design, as an important preparatory step for students choosing Tech-Prep programs of study in high school. Many community colleges have arrangements that enable students who complete an associate degree--whether in Tech-Prep or not--to transfer credits to particular four-year institutions. These agreements may provide the basis for consortium reports of a four-year postsecondary component, regardless of whether Tech-Prep students make use of the agreements. These systemwide activities or arrangements might have been promoted by the Tech-Prep consortium, or by state or local education authorities independent of Tech-Prep efforts.

The expansive Tech-Prep models reported may also partially reflect the frequency with which Tech-Prep is not implemented as a distinct program of study. Other survey data and site visits indicate that Tech-Prep initiatives often diverge from the definition of Tech-Prep as a sequence of courses. In these cases, the "program model" reported may be consortium coordinators' best estimates of the grade levels likely to be affected by their more diffuse initiatives, such as broad teacher training on contextual learning.

Consortia increasingly view Tech-Prep as having a defined core program

The extent to which Tech-Prep is implemented as a distinct pathway appears to have grown over the last several years. Consortia increasingly reported having a required set of activities or courses that define the Tech-Prep experience. In 1995, three-quarters of consortia reported having a defined core program in at least one member district, compared to 70 percent of consortia in 1994 and 63 percent in 1993.

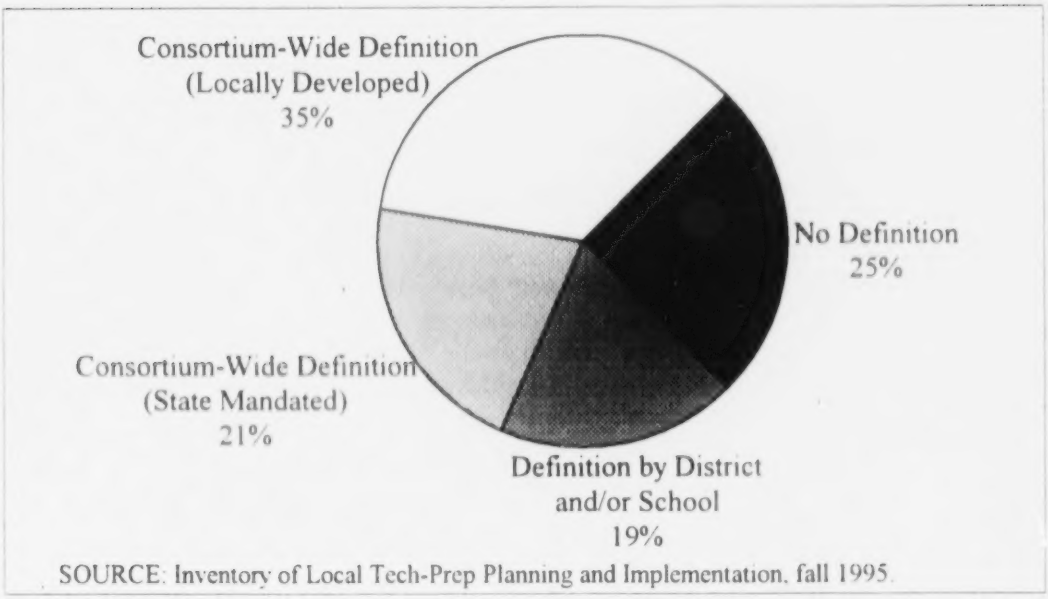
These figures suggest that in 1995 at least one-quarter of consortia did not implement Tech-Prep as a defined program of study as intended by the legislation. Some of these consortia (30 percent of those without a core program) are newer grantees, who may still be planning the features of their Tech-Prep initiatives. However, a substantial share are undoubtedly consortia that have chosen to implement particular components of Tech-Prep without a defined student target group. Site visit observations suggest that consortia undertaking this approach commonly offer professional development on applied or contextual learning to a broad set of teachers or engage teachers broadly in efforts to develop articulation agreements. While these efforts may have some effect on a wide range of faculty, they do not necessarily represent substantial changes in the instructional program.

State agencies play growing role in defining Tech-Prep program activities

The required set of courses and activities that make up a Tech-Prep program can be determined by state, consortium, or individual school staff. In nearly a fifth of consortia in 1995, local school districts or individual high schools adopted their own definitions of a core program, resulting in diversity among members of the same consortium (Figure IV.2). In contrast, about half of all consortia (56 percent) had a definition for their Tech-Prep programs that was used uniformly by all members of the consortium; about a third of these consortia reported that the definition was state mandated.

FIGURE IV.2

SOURCES OF CORE PROGRAM DEFINITIONS
(Percentage of Consortia)



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

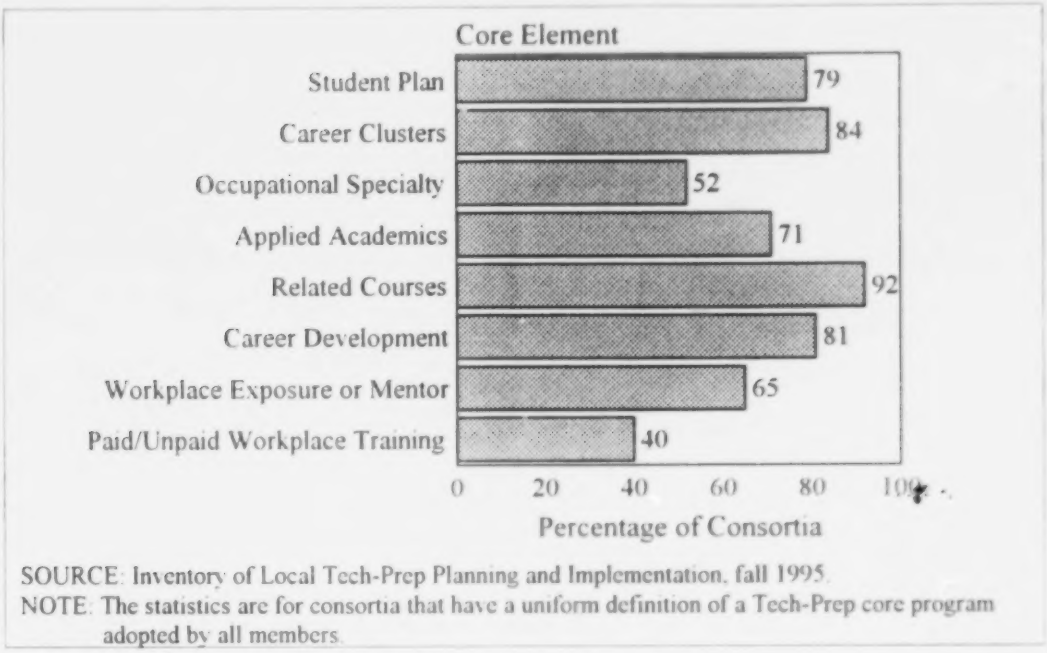
States have increasingly tried to encourage consistency in Tech-Prep definitions, according to the survey data and to information obtained from state Tech-Prep coordinators. Each year since 1993, a higher proportion of consortia have attributed the configuration of their Tech-Prep programs to a definition provided by state agencies. However, local understanding of these state definitions varies. In many states (32) some consortia reported using a state-mandated definition, while others reported using one that was locally determined. The lack of clear consensus within many states suggests some confusion over state guidance among local consortia and a need to improve communication between the state and local levels. In only four states (Arkansas, Idaho, Louisiana, and South Carolina) did more than three-quarters of the local consortia in 1995 attribute their core program definition to state direction.

Consortia continue to emphasize traditional programmatic elements of Tech-Prep

Many of the features identified in Title IIIE or the Tech-Prep literature remain prevalent in Tech-Prep programs. According to local coordinators' reports, choosing a broad career cluster, developing an educational plan, taking applied academic courses and other academic or vocational courses related to their career cluster, and participating in career development activities are commonly required of students in Tech-Prep programs (Figure IV.3). In 1995, each of these components was included in

FIGURE IV 3

ELEMENTS OF DEFINED CORE PROGRAMS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.
NOTE: The statistics are for consortia that have a uniform definition of a Tech-Prep core program adopted by all members.

at least 70 percent of consortia with a consortium-wide definition; a similar proportion of consortia reported these components in 1994.[1]

Consortia combine core program elements in different ways. However, most program definitions follow the traditional Tech-Prep model. Just over half of those with consortium-wide core programs include choosing a cluster or occupational specialty, taking applied academic courses and cluster-related academic or occupational courses, and participating in career development activities as core program elements.

Workplace experiences are increasingly cited as elements of Tech-Prep programs

Workplace activities are becoming more prominent in Tech-Prep programs. The proportion of consortia that consider workplace activities to be a core part of the Tech-Prep experience has been growing since 1993. In 1995, 65 percent of consortia with consortium-wide core programs reported

[1]Data on core program elements were collected only from consortia with consortium-wide definitions. Although other consortia have defined core programs in at least some of their consortium schools, definitions vary across schools and districts, and it would have been overly burdensome to ask consortium coordinators to define each school's core program separately.

that occasional workplace exposure experiences, such as work site visits or assignment to a workplace mentor, were a part of the Tech-Prep core program, compared with 60 percent in 1994 and 45 percent in 1993. Similarly, paid or unpaid work experience or training is also becoming a more common requirement of Tech-Prep programs (40 percent of consortia in 1995, compared to 35 percent and 18 percent in 1994 and 1993, respectively). This trend undoubtedly reflects enthusiasm for the objectives of STWOA and the kinds of program features that STWOA intended to fund and that are consistent with Tech-Prep objectives.

Core program definitions often reflect objectives rather than current reality

Core program definitions reported by coordinators continue to reflect, at least partially, consortium goals rather than current program operation. For example, as in earlier years of the survey, nearly 20 percent of the consortia that report workplace experiences as a core element of their Tech-Prep programs do not currently make them available in any of their member school districts. Among consortia that reported including broad career clusters as a core program element, 12 percent do not, according to another survey question, currently have any member schools in which these clusters are defined and being implemented.

CAREER DEVELOPMENT AND GUIDANCE

Many consortium coordinators believe that career development is an important foundation for Tech-Prep.[2] Career awareness and exposure activities and counseling can help students explore the educational and career options available to them. The aim of these activities is to help students make informed choices about Tech-Prep programs, courses, workplace experiences, postsecondary plans, and ultimately, career direction. Career counseling and related career development activities may be provided specifically as a component of a Tech-Prep program, required of all students in a school according to a prescribed sequence, or simply offered to any students who wish to make use of them.

Consortium schools are increasingly offering career development activities

All consortia offer some kind of career development activity to Tech-Prep and/or other students in at least some of their member schools (Figure IV.4). Career development units or lessons included in academic or vocational classes, individual counseling sessions, career exploration software, and visits to worksites are all frequently cited by consortium coordinators as activities that are available in at least one of their schools. Uniform adoption of particular activities by all schools within a consortium is less common.

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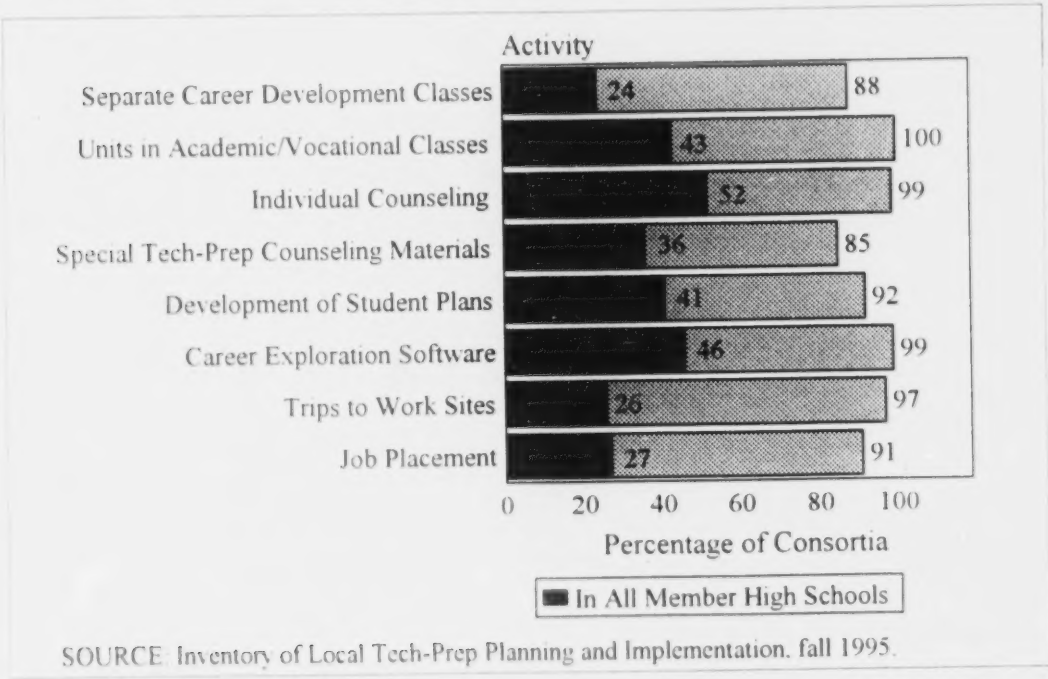
[2]Although Title IIIE of the Perkins Act does not explicitly call for career development and counseling, it does encourage the implementation of "preparatory services," which are generally viewed as including these functions.

FIGURE IV.4

CONSORTIA OFFERING CAREER DEVELOPMENT IN HIGH SCHOOLS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

Some activities *are* becoming more consistently available in consortium schools, however. For example, at the high school level, uniform implementation of special career materials developed for Tech-Prep increased from 28 percent of consortia in 1993 to 36 percent in 1995. Educational plans indicating courses students will take at both the secondary and postsecondary levels are also available in all schools in a higher proportion of consortia, rising from 33 percent in 1993 to 41 percent in 1995.

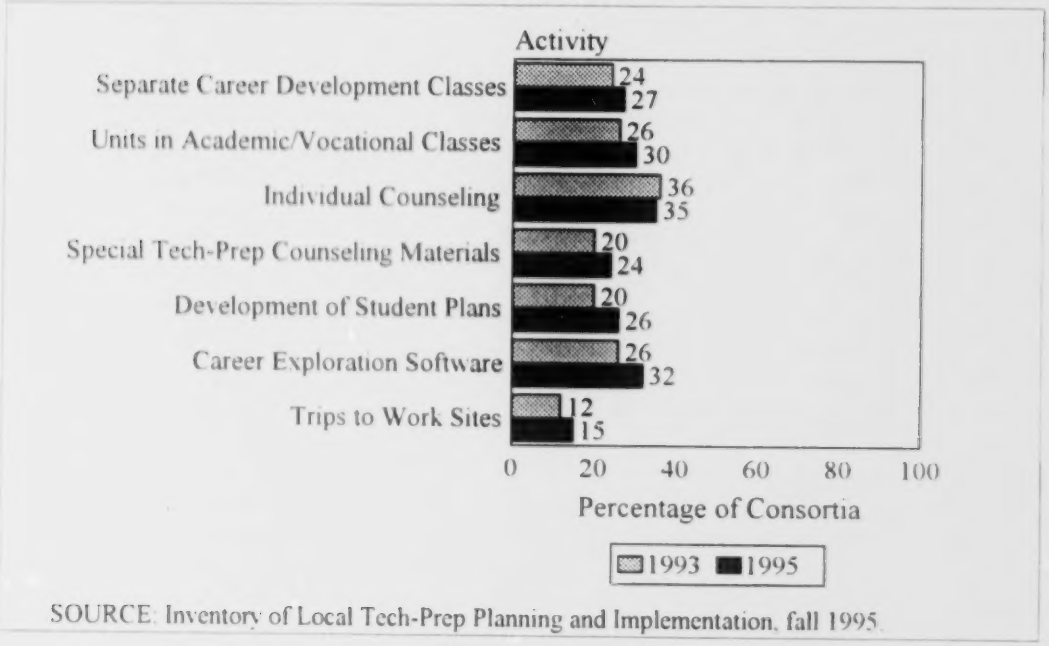
Some progress is also being made at the middle or junior high school level (Figure IV.5). A substantially higher proportion of consortia and their schools are offering career development or awareness activities for younger students now than in 1993. For example, 32 percent of consortia in 1995 reported making career exploration software available in all their member middle/junior high schools, compared to 26 percent in 1993.

The definition and delivery of career development remains largely a matter for individual districts and schools

Tech-Prep may not greatly affect specific career development activities implemented in consortium schools. Tech-Prep initiatives in some communities are undoubtedly playing a role in generating motivation or enthusiasm for renewed attention to career development. There are numerous examples of Tech-Prep consortia----including several of the 10 in-depth study sites--where Tech-Prep resources have been used at least partly to develop a specific sequence of career development activities in their

FIGURE IV.5

CONSORTIA OFFERING CAREER DEVELOPMENT IN ALL MEMBER MIDDLE/JUNIOR HIGH SCHOOLS, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

member communities. However, relatively few consortia (less than half) are implementing particular activities consortium wide. For example, the most prevalent approach to career development by some measure is the integration of key activities into academic and/or vocational courses. All consortia report implementing this approach in at least some of their member schools. Only 42 percent of consortia report offering this strategy in all of their member schools, however. Instead, the availability of career development activities is more likely left to schools and districts to determine. Or, if there is a consortium "model" for career development, it has not been fully implemented.

OCCUPATIONAL EMPHASIS OF TECH-PREP PROGRAMS

The foundation of the original Tech-Prep model was a coherent sequence of academic and vocational courses designed to prepare students for entry into an identified career area. The course sequence was expected to form a rigorous program of study structured around either a broad group of related occupations--"a career cluster"--or a particular occupation. Choosing a Tech-Prep program of study would differ from choosing a traditional vocational course, because the selection of a program of study would affect both the vocational *and* the academic courses taken.

A common strategy for developing Tech-Prep programs of study is to build on available vocational course offerings. Some consortia conduct needs assessments--surveying their business community to identify occupational areas in current and future demand--to enable them to target Tech-Prep program

development. Other consortia choose to include all existing occupational courses in Tech-Prep. Programs of study are then formed by recommending relevant academic courses--often those with a more "applied" approach--to students interested in the careers or jobs represented by the occupational courses available.

This process results in considerable variation in the scope of Tech-Prep programs. Some focus on preparing students for narrowly defined occupations, while others provide broader training relevant to a wide range of related occupations. Thus the names of Tech-Prep programs can range in specificity from "Health Occupations" and "Environmental Services" to "Restaurant Management" and "Nursing Assistance." Tech-Prep program titles, like those of vocational programs, can also fail to represent the specificity of the training accurately; for example, some programs designated as Health Occupations are more specifically focused on certified nursing assistant preparation. Because of these ambiguities, the survey asked consortium coordinators to report on their Tech-Prep programs, not using their own titles but according to six broad career category labels that encompass the full range of occupations.

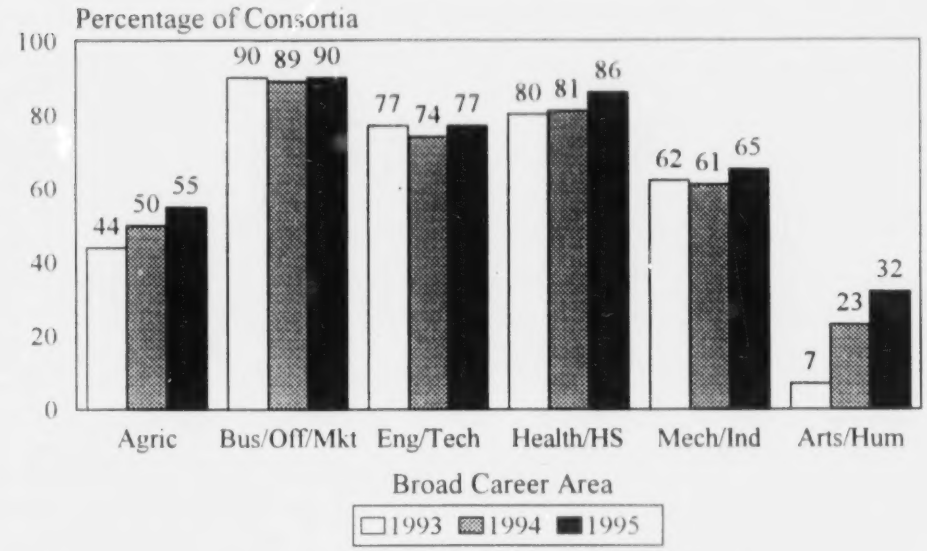
Career-focused programs of study are widespread and increasingly available

Programs of study that link academic and vocational courses are becoming more common. More consortia than in previous years reported offering career clusters or other occupationally focused programs of study to guide Tech-Prep students' choice of academic and vocational courses. In 1995, students in more than three-quarters of consortia were able to follow a Tech-Prep program of study. This represents a substantial increase from 1994, when about two-thirds of consortia reported making these programs available to Tech-Prep students. The proportion of consortium school districts that offer these career-focused Tech-Prep programs also increased somewhat. In 1995, 684 consortia made programs of study available in 3,559 districts, or 62 percent of all of the districts included in those consortia. By contrast, the 574 consortia that offered Tech-Prep programs in 1994 did so in only 58 percent of their consortium districts (a total of 2,748).

The availability of programs within the six specific career clusters listed in the survey has generally increased slightly over the past several years (Figure IV.6). The Agriculture cluster and, particularly, the Arts/Humanities cluster have shown marked growth in availability since 1993. The increasing prevalence of Tech-Prep programs in the Arts/Humanities (such as journalism and fine arts) may reflect a trend toward offering a comprehensive set of programs of study from which all or most students in a school might choose, rather than a more selective set of Tech-Prep programs based on traditional vocational areas. This theory is supported somewhat by the survey data; consortia that offer programs of study in Arts/Humanities are more likely to offer programs in all of the other broad career areas, compared to consortia that do not offer Arts/Humanities programs of study. On average, consortia in 1995 offered programs of study in four different career areas.

FIGURE IV.6

PERCENTAGE OF CONSORTIA WITH PROGRAMS IN SPECIFIED CAREER CLUSTERS, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

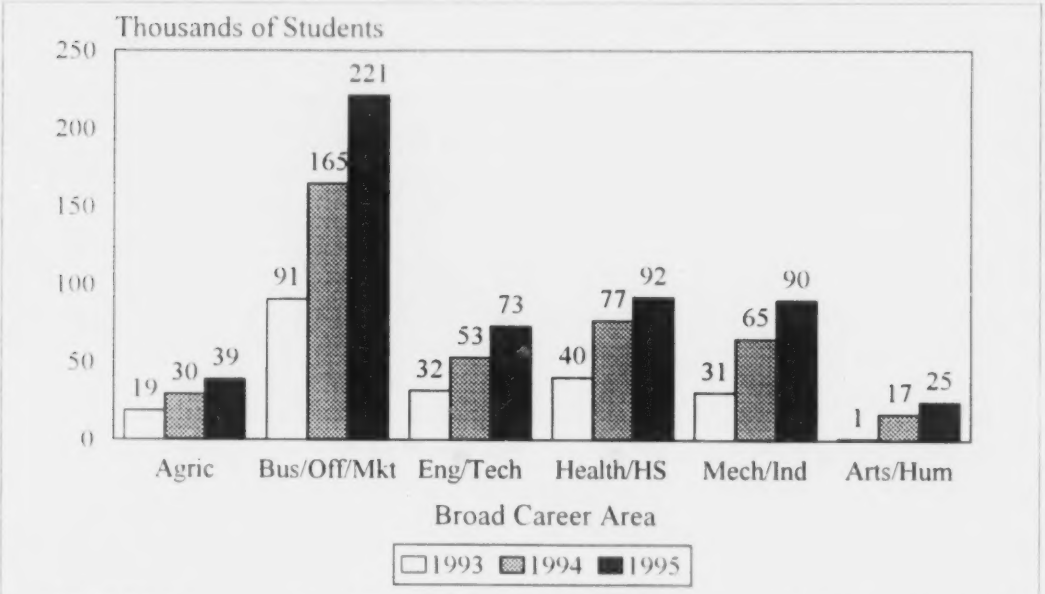
Enrollment in programs of study has also risen

Students are increasingly following these Tech-Prep career-focused programs of study. The greater number of consortia implementing these programs has led to higher overall student participation in them (Figure IV.7). Student involvement has more than doubled since 1993 in each of the specified career clusters, with substantial growth even between 1994 and 1995. For example, in fall 1995, 56,000 more students were participating in Tech-Prep programs of study related to business, office, or marketing careers than in 1994.

Perhaps more important, the average number of Tech-Prep students enrolled in each career area has also increased in those consortia responding to the survey in all three years. For example, on average, consortia implementing programs of study that prepare students for careers in the Arts and Humanities involved 227 students in 1995 compared with 188 students in 1994. Similarly, the average number of students per consortium in a Business/Office/Marketing program grew from 545 in 1994 to 635 in 1995. These figures suggest that consortia are actually enrolling more students in these programs of study as well as expanding the number of programs offered.

FIGURE IV.7

NUMBER OF STUDENTS PARTICIPATING IN SPECIFIED CAREER CLUSTER PROGRAMS, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

The occupational emphasis of Tech-Prep generally follows patterns of vocational course taking

Not surprisingly, participation of Tech-Prep students in career-focused programs of study mostly reflects the distribution of students in vocational program areas. Comparisons with the most recent data available from the National Assessment of Vocational Education (NAVE 1994) suggest that overall patterns of participation are similar. The highest proportion of both Tech-Prep students and of vocational students overall were enrolled in the business area, and relatively few in both groups were enrolled in agricultural programs. Relative to the general student population, however, Tech-Prep students are more concentrated in health and human service oriented programs and less concentrated in the mechanical, industrial, and practical trades (which are comparable to trade and industry vocational courses). However, the NAVE data represent vocational enrollments in 1990--several years behind that described by the national Tech-Prep data. The NAVE reports that more recent data on vocational programs indicate that overall student enrollment in health courses has been increasing, making enrollment patterns for Tech-Prep and other students more comparable.

CURRICULUM DEVELOPMENT AND APPLIED ACADEMICS

A key educational strategy promoted by the Perkins legislation is the integration of academic and vocational learning, particularly within a program of study. Although researchers have identified several different approaches to linking the best practices of academic and vocational instruction, only one--"applied

academics"--is explicitly recognized in the Tech-Prep act. This particular approach focuses on teaching academic classes by involving students in hands-on applications of theoretical concepts, using examples ("context") from careers, industries, or the world of work more generally. Other integration approaches consortia use include modifying occupational-technical courses to emphasize academic skills or creating projects that link the content and instructional strategies of both vocational and academic courses.

The Perkins Act acknowledges that consortia may have to develop new curricula or substantially modify existing curricula in order to achieve the goals of Tech-Prep. Tech-Prep consortia may choose to develop their own curricula or to use curricula already prepared by others, such as commercially available applied academic curriculum packages.

Development and implementation of new applied academic curricula continues

Introducing contextual or applied learning strategies into academic courses remains a common focus of Tech-Prep consortia. In 1995, 96 percent of consortia reported that they had recently (within the past 24 months) implemented new applied academic curricula that was developed at either the state or local level or were continuing to implement commercial applied academic packages. A similar proportion of consortia (94 percent) in 1993 reported implementing such curricula. This emphasis on curriculum is reflected in consortium expenditure priorities. Overall, 16 percent of consortium resources in 1995 were devoted explicitly to curriculum development activities, with another 25 percent spent on staff development, much of which is intended to result in changes in teaching methodology.

Heavy use is made of both commercial and locally-developed curricula

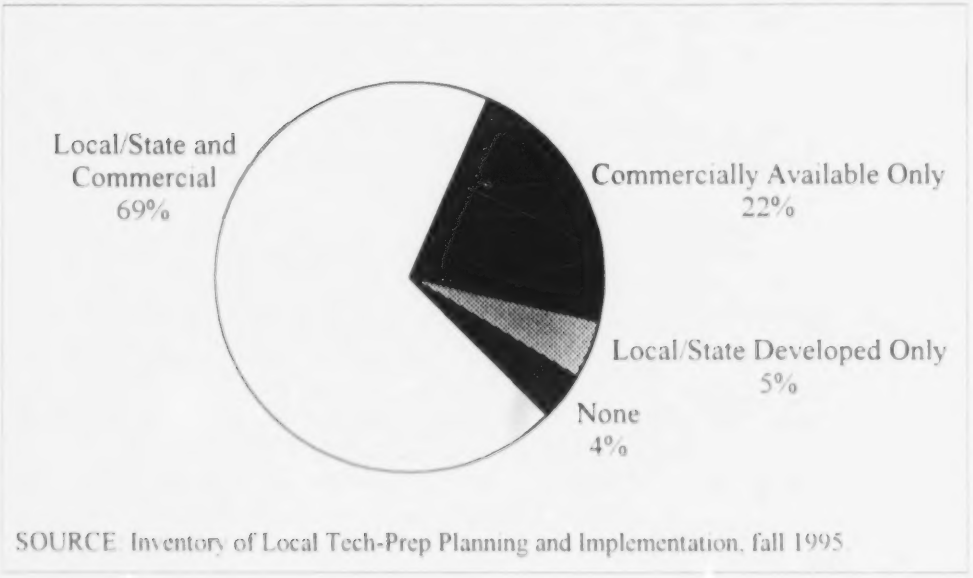
Most consortia rely on a combination of curricula developed by local or state staff and on commercial curriculum products purchased from vendors (Figure IV.8). In 1995, over 90 percent of consortia reported implementing commercial products, with about a quarter of consortia using only these products for applied academic courses. The proportion of consortia relying on commercial curricula has remained stable since 1993.

Recent implementation of new or substantially revised curricula developed by state or local staff is less prevalent. Seventy-four percent of consortia in 1995 reported introducing state- or locally-developed curricula in the previous two years. Another 22 percent of consortia in 1995 that did not recently implement such curricula had done so prior to 1993, according to the fall 1993 survey. Thus, a total of 853 consortia (96 percent of those in 1995) had at some point since 1993 introduced new applied or contextual learning curricula that was developed at the state or local levels. The survey does not allow us to determine, however, how much of the curricula implemented before 1993 was still in use in 1995. The overall proportion of consortia implementing new locally developed applied curricula has declined (74 percent in 1995 versus 80 percent in 1993). These figures suggest that local curriculum development efforts have tapered off in recent years.

The slightly greater reliance on commercial curricula most recently is somewhat inconsistent with reports from the in-depth study sites, where there has been retrenchment in the use of commercial, stand-alone applied academic courses. Because of the stigma often associated with these designated courses, some more-established consortia and their member schools have begun instead to encourage

FIGURE IV 8

SOURCES OF APPLIED ACADEMIC CURRICULA
(Percentage of Consortia)



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

teachers to infuse applied approaches into traditional academic courses. Commercial curriculum packages, however, still seem to be the favored way to start with applied academics. Relatively heavier deployment of commercial curricula probably reflects the continuing use of the packages in some communities as well as the efforts of new Tech-Prep consortia and schools without any applied curricula to begin introducing applied or contextual learning approaches.[3]

Implementation of applied curricula across consortium schools remains uneven

Although substantial proportions of consortia report adopting applied approaches to academic instruction, they are using these strategies in only some of their schools. For example, the Applied Math curriculum from the Center for Occupational Research and Development (CORD)--the most widely implemented of the commercial curricula--is currently available in 84 percent of all consortia, but in just under half of those consortia's secondary schools (Table IV.1). New locally or state-developed applied math curricula are offered in 63 percent of consortia, but in only about a third of those consortia's secondary schools.

We cannot determine, based on the survey, what proportion of consortium schools are using either of the two types of applied curricula--commercial or locally developed. However, visits to the in-

[3]Between 1993 and 1995, almost 250 consortia were formed and began implementing Tech-Prep.

TABLE IV.1

USE OF APPLIED ACADEMIC CURRICULA

Subject Area	Consortia		Secondary Schools		Postsecondary Schools	
	Number	Percentage	Number	Percentage[a]	Number	Percentage[a]
Locally or State-Developed Curricula Introduced Recently (1993-1995)						
Biology	424	47	1,552	15	103	7
Chemistry	329	37	1,071	10	75	5
Mathematics	566	63	3,243	32	250	18
Physics	402	45	1,367	13	111	8
English and Other Language Arts	504	56	2,787	27	211	15
Economics	107	12	295	3	20	1
History	67	7	147	1	12	1
Other	174	19	608	6	105	7
None	233	26	--	--	--	--
Commercial Curricula Currently in Use						
Applied Biology/Chemistry	561	63	2,168	21	66	5
Applied Communications	637	71	3,524	34	139	10
Applied Economics	130	15	479	5	10	1
Applied Mathematics	748	84	4,887	48	200	14
Chemistry in the Community	110	12	329	3	2	0
Principles of Technology	631	71	2,499	24	139	10
Other	76	8	268	3	18	1
None	87	10	--	--	--	--

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

[a]The denominators used in calculating the percentages are the sums of the reported number of secondary schools and community and technical colleges, respectively.

depth study consortia and discussions with state and local coordinators suggest the two types are not mutually exclusive within schools: many schools use both commercial curricula and curricula obtained from the state or developed by local teachers. Thus, we cannot estimate the overall proportion of schools using any kind of applied math curricula. It is clear, however, that even within consortia that report offering applied curricula, not all consortium secondary schools are implementing them.

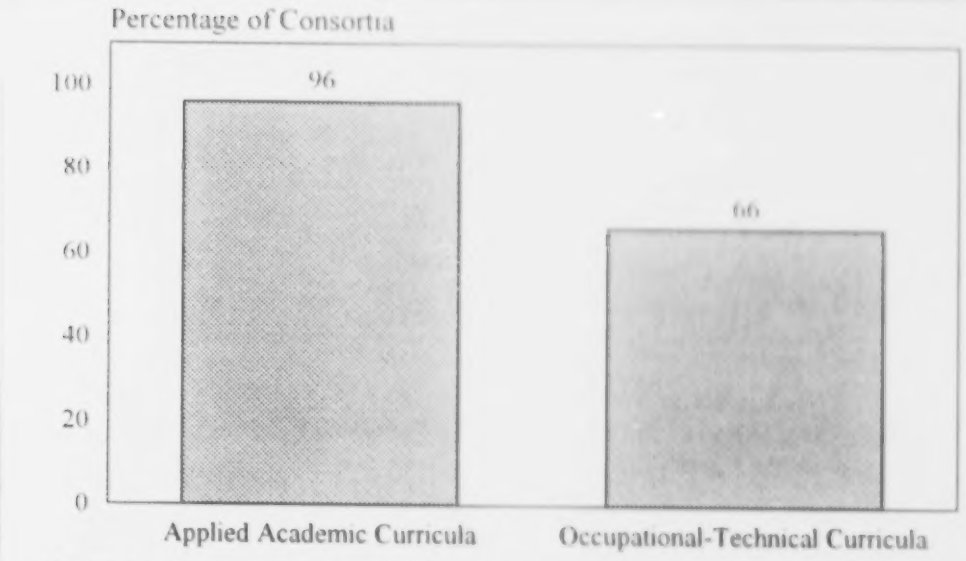
Applied academic curricula are even more uncommon on postsecondary campuses. Consortia have focused most of their applied curriculum development efforts at the secondary rather than the postsecondary level. As in earlier years of the survey, relatively few postsecondary institutions have introduced new applied academic curricula, whether purchased from vendors or developed by local or state staff (Table IV.1). For example, among consortia that recently adopted applied math curricula developed locally, only 18 percent of their postsecondary schools are implementing these curricula. Unlike secondary schools, postsecondary institutions are less likely to rely on commercial applied curriculum packages.

Consortia continue to emphasize applied academic curricula over vocational curricula

Consortia are more likely to develop and/or implement new applied academic curricula than updated occupational or technical curricula (Figure IV.9). In both 1993 (the last year questions about curriculum development were asked of most consortia) and 1995, the percentage of consortia introducing applied curricula was far higher (more than 90 percent) than the proportion implementing new or revised vocational course curricula (about two-thirds). Although the priority given to

FIGURE IV.9

RECENT INTRODUCTION OF APPLIED ACADEMIC AND OCCUPATIONAL-TECHNICAL CURRICULA



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

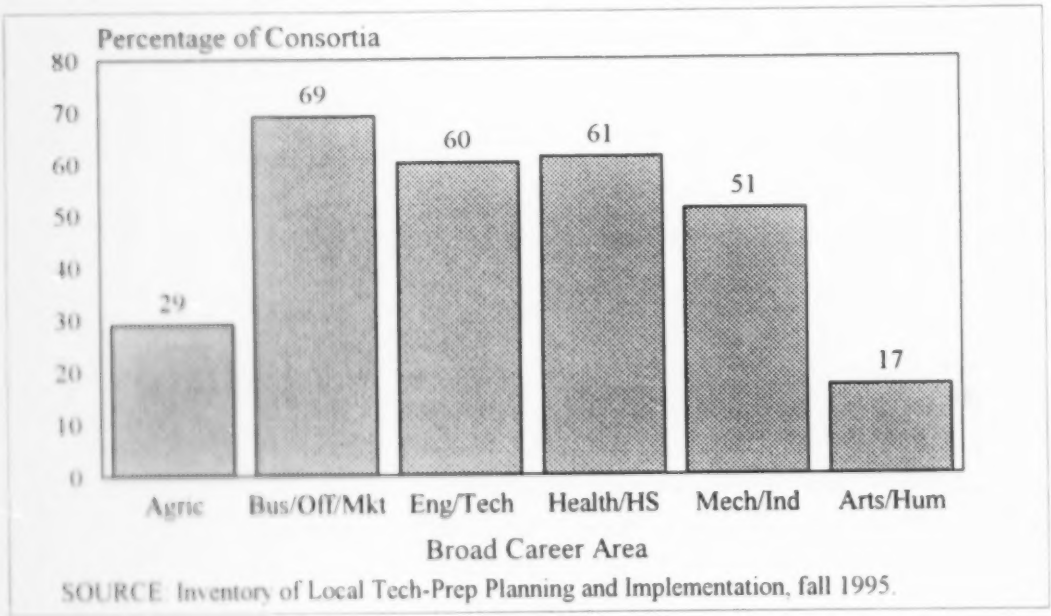
applied academic curricula is likely to remain, more attention may also be given to modifying technical curricula as Tech-Prep becomes a more-established reform. The data suggest that older grantees are more likely to implement new vocational curricula than are newer grantees.

Development of vocational curriculum follows a pattern similar to that of career clusters

Consortia have emphasized technical curriculum activity in the same occupational areas in which they offer career-focused programs of study. Consortia that developed and implemented new occupational curricula between 1993 and 1995 focused most of their attention on courses in the business, office skills, and marketing cluster (Figure IV.10). Almost 70 percent of consortia introduced new or substantially revised courses related to this broad career area. Engineering/Technology and Health and Human Services were two other common career areas in which consortia both offered programs of study in 1995 and introduced new curricula.

FIGURE IV.10

RECENT IMPLEMENTATION OF NEW OCCUPATIONAL-TECHNICAL CURRICULA AT SECONDARY LEVEL, BY BROAD CAREER AREA



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

ARTICULATION OF SECONDARY AND POSTSECONDARY PROGRAMS

Title IIIE of the Perkins Act identifies articulation agreements as an essential element of Tech-Prep programs. These agreements are intended to facilitate students' transition from secondary to postsecondary institutions by eliminating redundancies in course work and providing opportunities to earn college credit

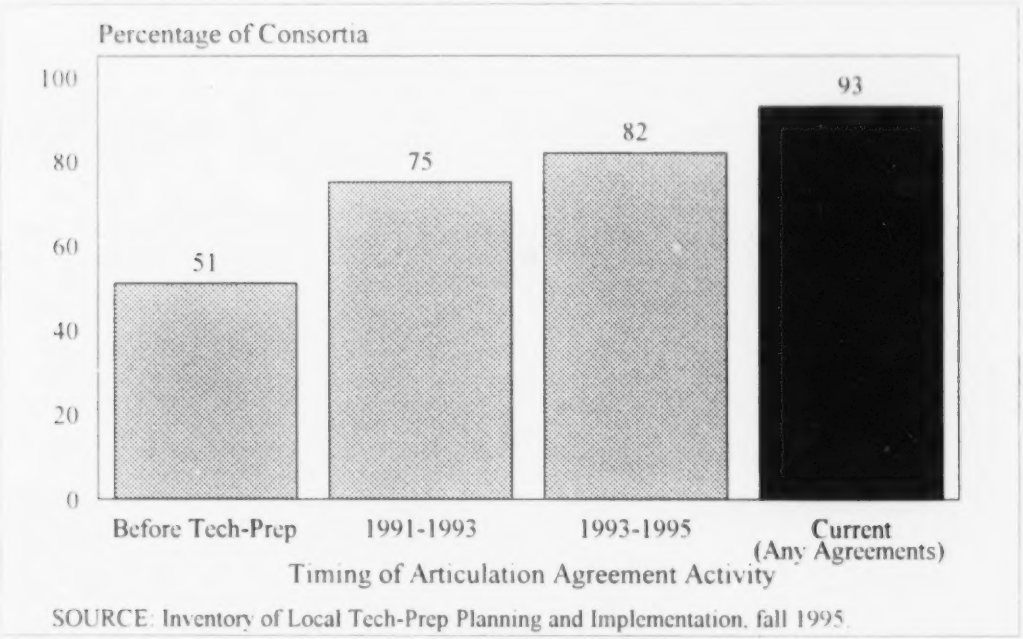
or advanced standing in postsecondary programs for skills acquired in high school. Articulation also promotes cooperation between secondary and postsecondary faculty and can encourage collaboration on curriculum development. Articulation agreements were in place in many localities even before the Tech-Prep legislation and so have often served as a starting point for Tech-Prep implementation.

Consortia continue to expand articulation

Developing articulation agreements remains a focus of consortium activity. Eighty-two percent of Tech-Prep consortia signed new agreements between 1993 and 1995, most of them building on experience with articulation that, in many cases, began even before the Tech-Prep consortium was formally established (Figure IV.11). These figures suggest that even consortia with existing agreements continue to sign new ones, either to develop articulation in new occupational specialty areas or to expand to include new or additional consortium members. Overall, 93 percent of consortia in 1995 reported having an articulation agreement in place.

FIGURE IV.11

DEVELOPMENT OF ARTICULATION AGREEMENTS FOR CONSORTIA IN 1995



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

Many postsecondary institutions are involved in articulation efforts

- As articulation agreements have expanded, so has postsecondary participation in them. Most of the nation's community and technical colleges are probably now involved in articulation agreements with secondary members of Tech-Prep consortia. Consortia in 1995 reported more than 1,500

postsecondary institutions as partners in these agreements. If this figure represents agreements mainly with two-year institutions, then it suggests that all the community college members of these consortia and most of the nation's community colleges are involved in articulation.[4]

To a limited extent, Tech-Prep consortia also provide links to registered apprenticeship programs. Secondary districts or schools may develop agreements with specific apprenticeship agencies or union training programs that enable high school vocational students to earn credits towards the education hours required for journeyperson status. We estimate between 7 and 14 percent of consortia have developed an articulation agreement of this type with at least one registered apprenticeship program. Fourteen percent of consortia reported having such an agreement, but only half of these consortia include registered apprenticeship programs as consortium members. It seems likely that some of the consortia that reported having such agreements confused "registered" apprenticeship programs and "youth apprenticeship" programs. The latter generally have no connection to the more formal requirements of agencies approved by the federal Bureau of Apprenticeship Training.

Granting credits continues to be the most common focus of articulation agreements

Articulation agreements can involve secondary and postsecondary partners in many kinds of collaborative efforts (Table IV.2). The emphasis consortia place on the different types of agreements has remained quite stable from 1993 to 1995.

Most often, articulation agreements establish the conditions for granting college credit for high school course work or competencies that are required elements of postsecondary programs. More than three-quarters of consortia in 1995 (688) had at least one articulation agreement that specified rules for obtaining this type of credit.

Articulation agreements also frequently involve curriculum development or realignment, either in combination with the granting of college credit or in place of credit. Close to half the consortia in 1995 had agreements that included changing competencies covered in postsecondary courses or secondary courses. In about 60 percent of the consortia, articulation agreements pledged the partners to identify a sequence of required and elective courses or competencies at the secondary and postsecondary levels to create a four- or six-year program of study.

Some consortia develop articulation agreements that help overcome the difficulties many Tech-Prep students face in trying to enter popular community college programs directly out of high school. Business and health associate degree programs, for example, often have waiting lists that prevent Tech-Prep students from pursuing the postsecondary component of their Tech-Prep program of study.

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[4]Some postsecondary institutions develop agreements with districts or schools in multiple consortia. For example, a few states, such as Massachusetts, have statewide articulation agreements. Multiple Tech-Prep consortia in those states are likely to report the same postsecondary partners in articulation. Thus, the reported total number of postsecondary institutions involved in articulation agreements is not an unduplicated count. The actual number of postsecondary institutions involved in articulation is somewhat lower.

TABLE IV.2

EXTENT AND SCOPE OF ARTICULATION AGREEMENTS

	Percentage of Consortia		Percentage of Postsecondary Institutions*	
Specific Articulation Agreement Provisions	1993	1995	1993	1995
Establishing Conditions for Granting Credit	81	87	45	59
Revising Postsecondary Courses	44	51	24	27
Revising Secondary Courses	55	62	30	37
Granting Advanced Standing in Apprenticeship	14	23	7	10
Providing Joint/Exchange Teaching	19	25	9	12
Defining Secondary/Postsecondary Courses Sequences	59	69	34	43
Ensuring Tech-Prep Graduates Slots in Postsecondary Schools	27	35	12	19

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

*The denomination used in calculating the percentage is the sum of the reported number of community and technical colleges, four-year colleges and universities, proprietary schools, and registered apprenticeship programs in consortia that reported articulation agreements.

without at least a year's delay. Approximately 30 percent of consortia reported that their articulation agreements guaranteed slots in postsecondary programs for graduates of secondary Tech-Prep programs.

Consortia typically concentrate articulation within a few career areas

Articulation agreements are intended to link secondary and postsecondary career-focused programs to create comprehensive pathways with increasing specialization and skill levels. Some agreements focus more narrowly on articulating individual courses--usually vocational--or competencies offered at both the secondary and postsecondary levels. In either case, articulation agreements most commonly fit into occupational categories.

Most consortia have multiple articulation agreements, but they generally cover programs in a limited number of career categories. In 1995, consortia with articulation had, on average, eight different articulation agreements in place. For individual consortia, however, these agreements generally covered programs within three of the six career categories. Few consortia have negotiated agreements that link secondary and postsecondary curricula in all six career areas (24 consortia). Instead, most consortia (583) offer more than one articulation agreement in the same career area, each agreement representing different specialties within that broad category. For example, secondary and postsecondary partners might sign an agreement articulating high school courses to a postsecondary accounting program as well as to word processing and secretarial programs, both of which would fall under the broad category of business/office skills/marketing.

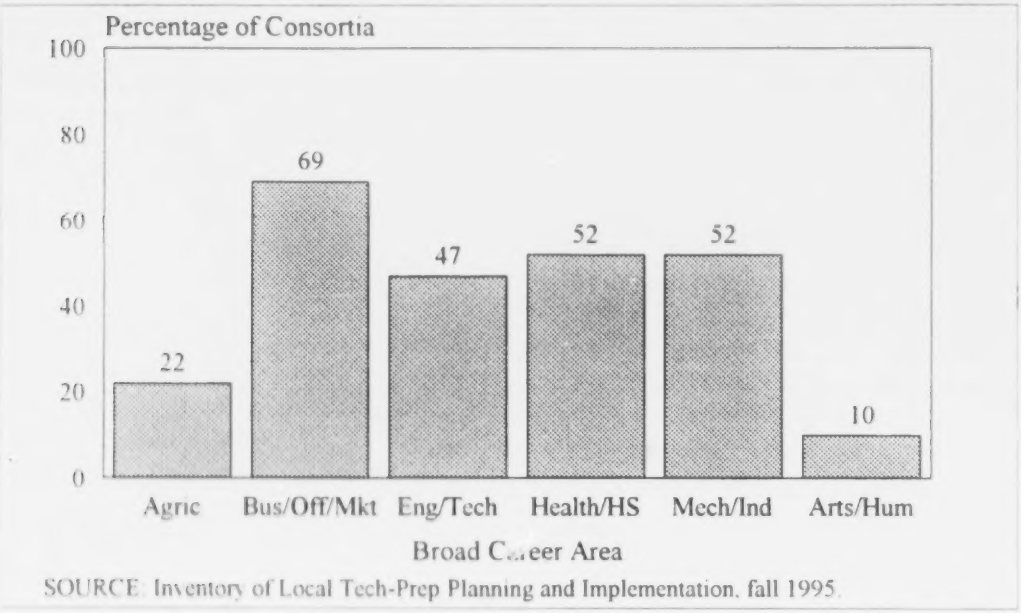
The prevalence of articulation agreements in different occupational areas generally follows the pattern of student involvement in specified career clusters. The most common broad career area into which articulation agreements fall is business/office skills/marketing, also the most common area for career-focused programs of study. In 1995, nearly 70 percent of consortia reported a total of 1,806 agreements in this area (Figure IV.12). Similar numbers of articulation agreements have been signed for courses or programs in health and human service careers and in mechanical, industrial or practical arts, with 52 percent of consortia reporting agreements in each of these broad areas.

SKILL CERTIFICATES

Helping students acquire high-level academic and technical skills is an important objective of Tech-Prep programs. Although Title IIIE of the Perkins Act does not promote any particular approach to validating students' skills, use of skill certificates has been encouraged by STWOA, which advocates the awarding of a special industry-recognized credential to document students' mastery of key competencies required for specified entry-level jobs. Efforts are underway at the national level and in some states to develop skill standards and certificates in some occupational areas. In the short term, STWOA also encourages local groups to develop their own skill certificates, with input from employer partners. Some Tech-Prep consortia have begun to participate in efforts to develop local certificates or to incorporate state- or nationally validated certificates into Tech-Prep programs.

FIGURE IV.12

PERCENTAGE OF CONSORTIA REPORTING SPECIFIC ARTICULATION AGREEMENTS, BY BROAD CAREER AREA OF THE AGREEMENTS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

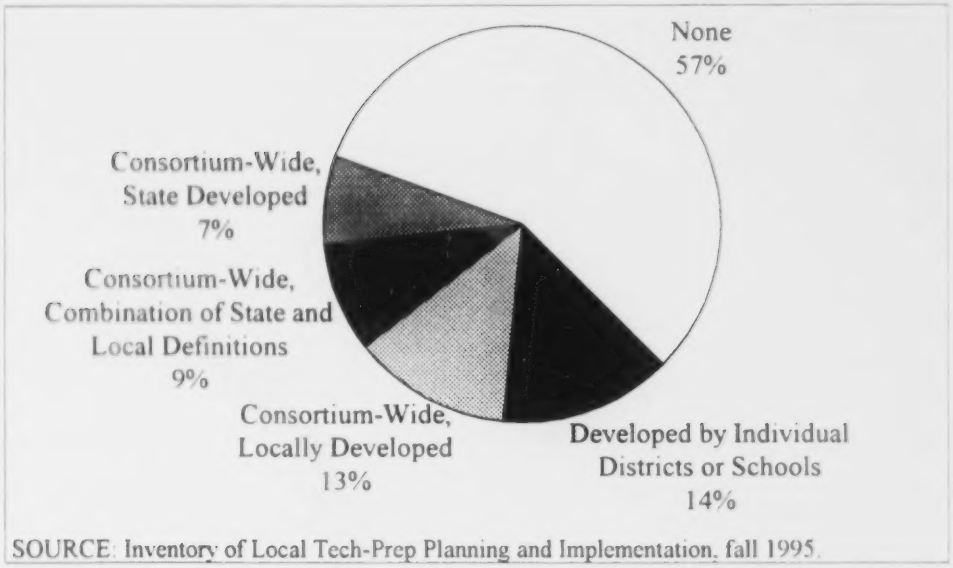
Use of skill certificates is slowly growing

Although skill certificates were never emphasized as a key component of Tech-Prep, consortia are increasingly adopting approaches to document Tech-Prep student competencies. In 1995, 43 percent of consortia had, in at least some schools or even consortium-wide, a process for assessing particular skills and recording their acquisition on a certificate that could be used to document qualifications for potential employers (Figure IV.13). In contrast, only about a third of consortia reported using skill certificates in 1994. In both years, the skill certificates reported by Tech-Prep consortia could be offered in just a single occupational area (for example, electronics) or could be available to students in many different occupational programs.

The skill certificates consortia or their members use were developed in a variety of ways. At least currently, states play a minor role in developing certificates used in Tech-Prep communities; a total of 16 percent of consortia (a little more than a third of consortia using certificates) reported that the state had input into the process of defining these credentials. In 14 percent of consortia, individual member districts or schools developed their own skill certification procedures, with no common process at the consortium level. Almost 30 percent of consortia in 1995 reported that an approach to skill certificates had been adopted by all consortium members, whether the certificates were developed by state agencies, the consortium, or through a combination of state and consortium input.

FIGURE IV.13

IMPLEMENTATION OF SKILL CERTIFICATES
(Percentage of Consortia)



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

Certificates continue to emphasize technical skills and program completion

Skill certificates can contain many different elements, depending on the scope, objectives, and career focus of the program. As was true in 1994, skill certificates awarded to Tech-Prep students in 1995 most often included a list of occupationally relevant technical skills the student mastered and noted the fact that the student completed an occupational program (Figure IV.14). Skill certificates awarded in Tech-Prep consortium communities also commonly identify the occupational or career focus of the program (such as engineering, allied heath services, or manufacturing). Only about half the Tech-Prep consortia that award certificates list on the credential the academic skills the student acquired or provide some type of assessment of academic or technical competencies (such as high, low, average).

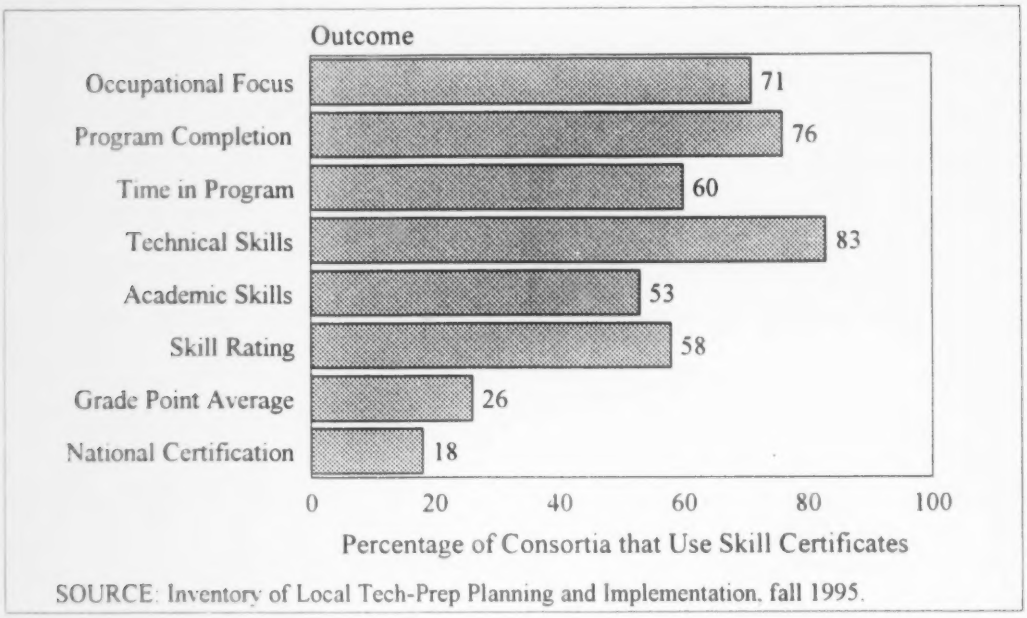
School staff typically validate student skills, but employers are doing so more often

Most skill certificates require an individual or group of individuals to evaluate and sign off on students' acquisition of identified competencies. Although the assessment and the final validation may be completed by different people or institutions, some sort of approval is often documented on the credential.

As in 1994, school-related staff are most likely to sign off on students' mastery of skills on certificates awarded in Tech-Prep communities. Nearly 90 percent of consortia granting skill certificates report

FIGURE IV.14

OUTCOMES DOCUMENTED IN SKILL CERTIFICATES



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

that approval of an individual from the student's school is included on the credential, most frequently a teacher (Figure IV.15). Skill certificates used in another one-third of consortia include approval from school district officials.

In contrast, only 31 percent of consortia that awarded skill certificates in 1995 included an employer's signature or approval. Although employer validation on certificates awarded to Tech-Prep students has grown (up from 25 percent of consortia in 1994), employers are still less involved than educators.

The survey data suggest that skill certificates reported by Tech-Prep consortia are more likely to be associated with traditional vocational education than with comprehensive work-based learning programs encouraged under STWOA. Where students are participating in ongoing workplace experiences that contribute to the development of their skills, it is common for employers to assess and sign off on student competencies (Silverberg 1996a). In contrast, few Tech-Prep consortia require employer validation of students' skills. Moreover, the types of features included in the certificates awarded in Tech-Prep communities, as described above, are typical of those given to students when they complete a sequence of vocational courses in high school.

FIGURE IV.15

APPROVAL RESPONSIBILITY FOR SKILL CERTIFICATES

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

WORKPLACE OPPORTUNITIES FOR TECH-PREP STUDENTS

Tech-Prep programs are intended to prepare students for eventual entry into career-oriented employment. Although Title IIIE encourages efforts to place students in jobs after completion of a Tech-Prep program, the act does not include workplace activities as a required element of Tech-Prep career preparation. Still, consortium interest in offering these experiences has been growing. Many consortia now consider workplace activities during the secondary and/or postsecondary school years as a useful feature and a natural extension of their Tech-Prep programs. Grants available under STWOA to expand systems of work-based learning are encouraging increasing numbers of Tech-Prep consortia to turn their attention to this component, since their members are often involved in STW partnerships.[5]

Consortium communities can provide work site experiences to Tech-Prep students in two ways. Some consortia focus on getting students to work sites as part of a Tech-Prep program. Other consortia rely on existing cooperative education or work-study programs as a way to make workplace experiences available to interested students, with Tech-Prep students having the same access to these opportunities as other students. Thus, the "availability" of workplace experiences to Tech-Prep students is an indicator of

[5]Thirty-five percent of consortia (or subsets of their members) received STWOA grants in 1995.

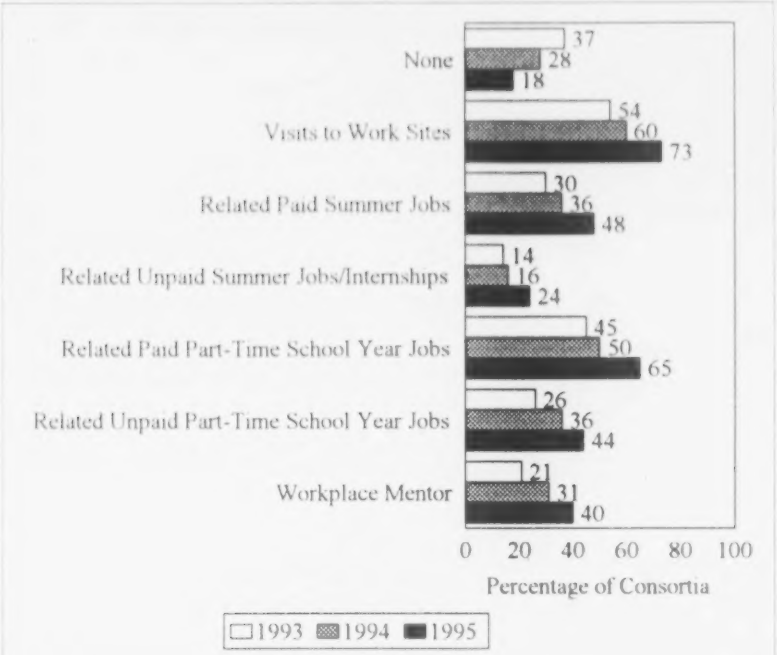
Tech-Prep communities' developing capacity to place students at worksites but is not necessarily a measure of the extent of their participation.[6]

Access to workplace activities continues to grow

Tech-Prep communities have increasingly made workplace experiences available to Tech-Prep and, in many cases, other students. Each year since 1993, higher proportions of consortia offered some types of workplace activities in at least one of their member districts (Figure IV.16). In fall 1995, 82 percent of consortia made workplace activities possible for Tech-Prep students, compared with 72 percent and 63 percent of consortia in fall 1994 and fall 1993, respectively. Consortia that provided access to these activities in all three years did so in 66 percent of their member districts in 1995, compared with about 50 percent in 1993 and 1994.

FIGURE IV.16

AVAILABILITY OF DIFFERENT TYPES OF WORKPLACE EXPERIENCES TO TECH-PREP STUDENTS, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

NOTE: "Related" = Related to student's occupational program.

[6]Estimates of participation in workplace activities by Tech-Prep students are presented in Chapter V.

More-established, larger, and urban consortia are somewhat more likely than other consortia to offer workplace experiences. For example, 85 percent of consortia that received their first Title IIIE grants before FY 1993 made workplace activities available, compared with 73 percent of consortia that received first funding later. Similarly, a higher proportion of consortia with more than 10 school districts (85 percent) offered these activities relative to consortia with fewer than 10 districts (79 percent). Urban consortia offered workplace experiences at a higher rate (88 percent) than either suburban (85 percent) or rural (79 percent) consortia. It seems likely that older consortia have had more time to develop relationships with local employers than have consortia that were more recently formed or funded. Consortia that include many school districts and those located in more urban areas are likely to have a larger and more varied pool of businesses in their areas as potential providers of worksite opportunities for students.

All types of workplace experiences were more frequently available in school year 1995-1996

Expansion of worksite opportunities in Tech-Prep consortia included a wide variety of different activities. Although growth occurred between 1993 and 1994, increases in the availability of each type of activity were most significant between 1994 and 1995 (Figure IV.16). Student access to all types of workplace experiences rose by at least eight percentage points among Tech-Prep consortia, with the availability of some types (such as paid part-time employment during the school year) growing by as much as 15 percentage points between 1994 and 1995. These substantial increases in consortium offerings are undoubtedly the result of implementation of STWOA in late 1994 and the higher proportion of Tech-Prep communities that either received STWOA grants for school year 1995-1996 or were actively competing for funding.

Although consortia have increasingly provided Tech-Prep students access to different workplace activities, they continue to do so inconsistently across districts. Many consortia offer these opportunities in a relatively small proportion of their member districts. For example, nearly two-thirds of all consortia in fall 1995 (585 consortia) reported making paid part-time school year jobs available to Tech-Prep students, but these jobs were offered in only 48 percent of their districts (2,376 out of 4,901 districts). This type of activity was available a year earlier in 42 percent of the districts in the 434 consortia that offered them anywhere. Access to most other types of workplace experience is even less prevalent. Only worksite visits were available in more than half (57 percent) of the member districts of consortia that offered them.

Workplace activities are still not a core part of the Tech-Prep experience

Although many consortia make workplace opportunities available, few actually require Tech-Prep students to participate in them. Of the 733 consortia that provided access to any type of workplace experience in fall 1995, only 295 (40 percent) considered participation in these activities a part of the core Tech-Prep program. Only 17 percent of the consortia that offered paid summer or school year jobs related to students' occupational programs made these experiences a requirement for Tech-Prep students.

Therefore, reports of increased access to workplace activities probably reflect an emphasis on introducing these options broadly in Tech-Prep communities, rather than a shift in priorities for Tech-Prep programs. This outcome is not surprising. Developing enough appropriate placements to

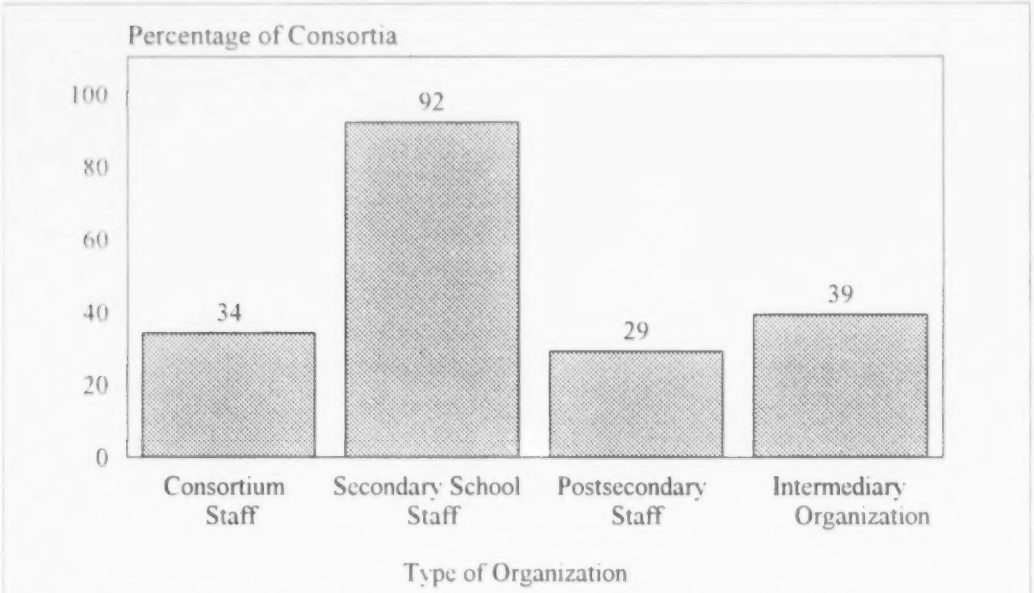
involve all Tech-Prep students--so workplace activity can be routine or required--is difficult. It is easier to develop a general program that helps interested students find positions and allows Tech-Prep students to participate, as is the case with existing cooperative education programs.

Secondary school staff continue to have primary responsibility for placing students in workplace experiences

Several types of organizations and staff can be involved in matching students with workplace opportunities. These include staff from secondary schools, postsecondary institutions, intermediary organizations that work with school and employers (for example, a chamber of commerce or private industry council), and employers themselves. Tech-Prep consortia sometimes rely on several of these entities to help them determine appropriate student placements (Figure IV.17).

FIGURE IV.17

TYPES OF ORGANIZATIONS INVOLVED IN PLACING STUDENTS IN WORKPLACE EXPERIENCES



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

Overall, secondary school staff are most likely to be active in allocating particular workplace assignments to Tech-Prep and other students. This result is not surprising. Despite the contribution and importance of third-party or intermediary organizations in STW partnerships, secondary school staff have several advantages in playing this role. Many schools and districts employ cooperative education counselors, whose primary responsibility is to place interested students in appropriate workplace positions. Some vocational education teachers also play this role, either formally or informally. Most important, the school staff know the students, their interests, and their capabilities

better than individuals with whom students spend less time. Thus, although the intermediary organizations may help to develop work site opportunities or recruit employers, the job of actually placing students seems to fall more naturally to school staff.

V. STUDENT PARTICIPATION AND OUTCOMES

The long-term viability of any new education initiative depends partly on the extent to which students are involved and achieve key outcomes. Tech-Prep consortia have struggled with the challenge of documenting student activity and advancement. Their approaches to implementing this reform, their definitions of who is considered a Tech-Prep student, and their ability to track student involvement and progress vary significantly. As Tech-Prep reforms spread, it is important to examine Tech-Prep participation, taking this diversity into account. This chapter describes (1) how consortia identify Tech-Prep students, (2) the number of students involved in Tech-Prep, and (3) the reported short-term outcomes of secondary Tech-Prep students.

DEFINING TECH-PREP PARTICIPATION

In order to report on Tech-Prep student participation, consortia must develop a clear definition of which students are to be considered "in Tech-Prep." The ability to define who is a participant depends largely on how Tech-Prep is implemented. Consortia that view Tech-Prep as a distinct and cohesive program with a required set of activities are more likely to be able to identify which students are participating; this holds true whether the Tech-Prep program is represented by a sequence of courses or a single course (e.g., applied math). In contrast, when Tech-Prep is conceived as part of a broad process for transforming education--for example, as a means to train teachers in contextual learning--identifying which students are "affected by" or "involved in" these reforms is more difficult. Tech-Prep implementation approaches and their corresponding interpretations of participation vary across and within consortia, and they change as consortium members introduce additional components and gain greater operational experience.

Consortia increasingly define who is a Tech-Prep student

Consortia's ability to describe how a student is counted as a Tech-Prep participant has grown (Figure V.1). In 1995, 88 percent of consortia reported a definition of Tech-Prep participation, compared with 83 percent in 1994 and 71 percent in 1993. Higher proportions of older grantees reported having a definition in 1995 than in previous years. Moreover, new FY 1995 grantees reported definitions one year after their first grant at a much higher rate than did earlier grantees at a similar point.

Consortia are more frequently able to define who participates in Tech-Prep than what Tech-Prep actually is. A higher proportion of consortia can state the basis on which they identify Tech-Prep students (88 percent) than the set of courses or activities in which Tech-Prep students are expected to be involved (75 percent). Thus, even consortia that did not report a core program reported having a definition for how to identify and count students. About 72 percent (160) of the 223 consortia that did not have a core program definition nevertheless reported that they had a definition of Tech-Prep participation.[1]

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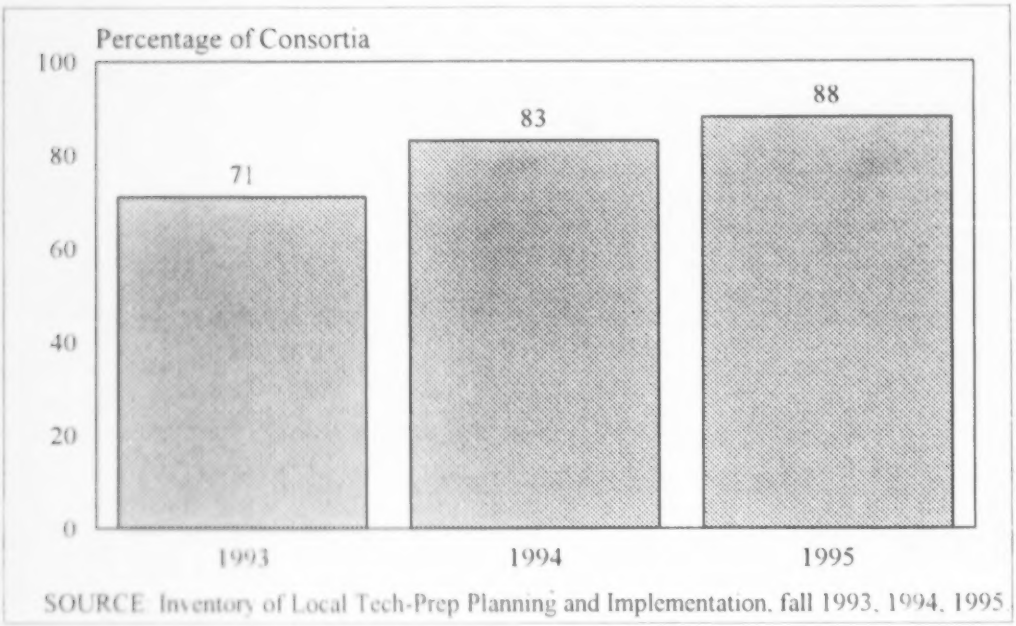
[1]For example, consortia that do not implement Tech-Prep as a distinct program of study may view students as "in Tech-Prep" if they take any academic course taught by faculty who have participated in professional development on applied learning.

FIGURE V.1

PERCENTAGE OF CONSORTIA REPORTING A DEFINITION OF TECH-PREP PARTICIPATION, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

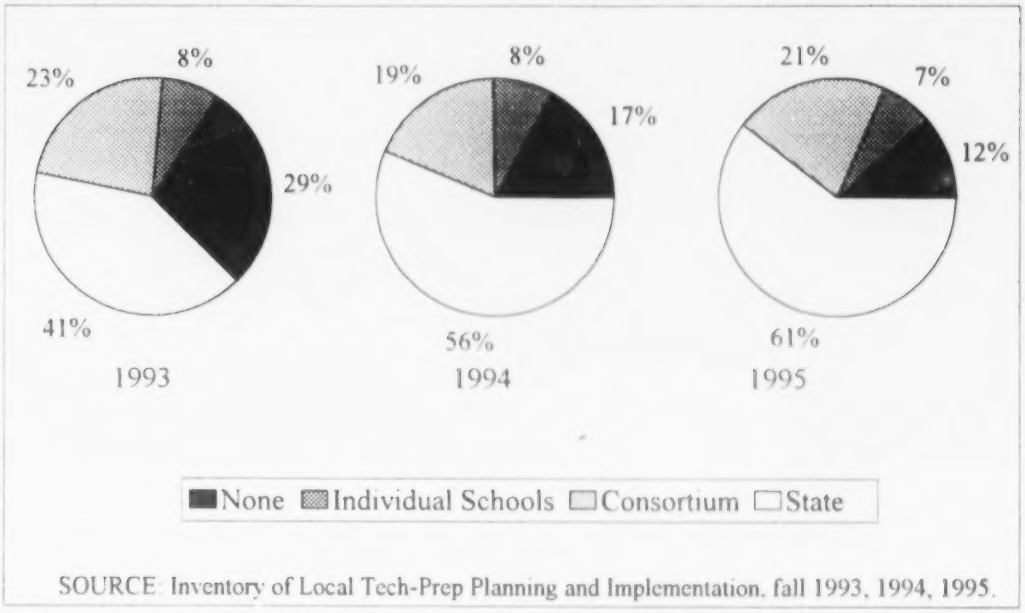
States are playing a greater role in defining participation

Since 1993, state agencies have increasingly provided local consortia with guidance on which students should be considered Tech-Prep participants (Figure V.2). The largest increase in state input occurred during the 1993-1994 school year, when many state administering agencies either developed a formal definition of a Tech-Prep student or made stronger demands on their local consortia to begin collecting data on Tech-Prep participation. By fall 1995, about 60 percent of all consortia (more than two-thirds of those that had a definition for participation) reported that the state had provided the definition.

This level of state direction on how to identify who is "in Tech-Prep" far exceeds state input into the content and structure of local Tech-Prep programs. Whereas 61 percent of all consortia reported that the state provided a definition of participation, only 21 percent of consortia reported that the state had specified a core program.

FIGURE V.2

SOURCE OF PARTICIPATION DEFINITION, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

Communication between state and local coordinators about state definitions is often unclear. Where state agencies formally provide a definition, we would expect all or most consortia to report using it. However, in most states, the source of consortia's participation definition varies; some consortia report a state definition, while others report forming their own. In only nine states did all responding consortia report using a state definition (Florida, Idaho, Louisiana, Nebraska, Oklahoma, South Carolina, Tennessee, Texas, and Vermont). If other states have established statewide participation definitions, local understanding of this message has so far been limited.

Consortia continue to report varying definitions of Tech-Prep participation

Interpretation of what makes a student "in Tech-Prep" still varies (Table V.1). In 1995, as in previous years, consortia with a consortium-wide definition described their participation definitions with varying combinations of five specified criteria: (1) whether a student has explicitly chosen Tech-Prep as a pathway or program, (2) whether a student has developed an educational plan indicating a course sequence across the secondary and postsecondary levels, (3) whether a student takes or completes an articulated or unarticulated vocational course, (4) whether a student takes or completes an applied academic course, and (6) whether a student participates in a work/training experience at a work site in a position related to a Tech-Prep course or career focus (Figure V.3).

TABLE V.1

REPORTING CAPACITY AND COUNTS OF TECH-PREP STUDENTS IN SCHOOL YEAR 1994-1995, BY PARTICIPATION DEFINITION

Definition Criteria						Number of Consortia Reporting Participation Definition	Percentage that Can Report Participation	Number of Students Reported
Chooses Tech-Prep[a]	Student Plan	Vocational Courses	Applied Academics	Workplace Experience	Other[b]			
X						29	55	10,542
	X					25	60	29,131
		X				32	44	21,269
			X			9	89	11,272
				X		0	0	0
X	X					13	77	16,678
X		X				19	79	21,743
X			X			9	78	3,884
X				X		1	100	905
	X	X				49	55	52,414
	X		X			9	56	6,216
	X			X		1	0	0
		X	X			29	72	26,773
		X		X		1	100	431
			X	X		1	100	540
X	X	X				89	83	80,341
X	X		X			9	89	7,216
X	X			X		1	100	391
X		X	X			38	76	21,654
X		X		X		6	67	3,184
X			X	X		3	100	711
	X	X	X			37	62	23,154
	X	X		X		8	63	10,489
	X		X	X		2	0	0
		X	X	X		16	94	14,110
	X	X	X	X		29	62	25,446
X		X	X	X		17	59	8,913
X	X		X	X		6	83	2,178
X	X	X		X		15	87	25,828
X	**X**	**X**	**X**			**128**	**75**	**107,706**
X	**X**	**X**	**X**	**X**		**78**	**73**	**95,934**
					X	17	47	21,940
Consortia with Definition Criteria						**726**	**70**	**650,993**
Consortia with Definitions Established by Individual Districts Schools						63	81	65,655
Consortia with No Definition						108	23	20,987
All Consortia						**897**	**65**	**737,635**

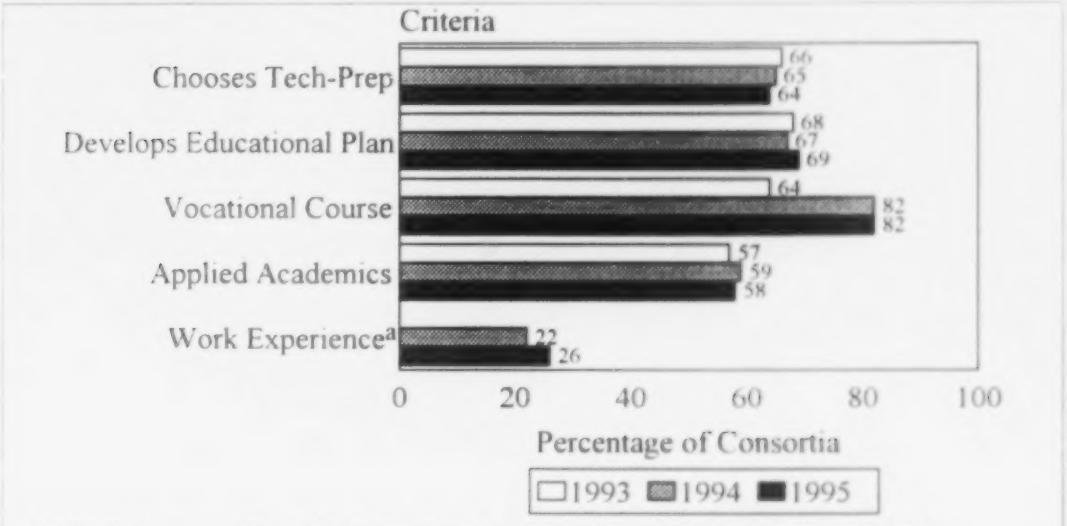
NOTE: Definitions of participation were reported only by consortia in which all consortium members adopted the definition. These consortia are 87 percent of all consortia that reported participation numbers and accounted for 88 percent of all reported Tech-Prep students in SY 1995.

[a]In consortia where participation is defined based only on a student's choice of Tech-Prep, other program components are undoubtedly in place as well, but the consortia simplify the counting of Tech-Prep students by using a single criterion.

[b]These include consortia that define Tech-Prep students as all students in the consortium schools, all students in the consortium schools who have not chosen a college preparatory pathway, or all students who "meet the criteria defined in the Perkins legislation."

FIGURE V.3

PERCENTAGE OF CONSORTIA REPORTING SPECIFIED CRITERIA FOR DEFINING TECH-PREP PARTICIPATION, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

NOTE: These statistics are for consortia that have a consortium-wide definition of Tech-Prep participation.

[a] This category was added to the list of criteria for the 1994 survey.

A relatively small set of consortia come close, in defining participation, to fulfilling the concept of a defined program of study as promoted by the Title IIIE legislation. About 28 percent (206) of the 726 consortia that reported a definition for counting Tech-Prep students included choosing Tech-Prep, completing an educational plan, and taking both applied academic and vocational courses (see shaded rows in Table V.1). The proportion of consortia with this definition has grown slightly, up from 24 percent in 1993 and 20 percent in 1994.

Tech-Prep participation is most strongly linked to vocational coursetaking

Vocational education provides the foundation for the vast majority of Tech-Prep initiatives. The most common criterion included in consortium definitions of Tech-Prep participation is enrollment in a vocational course. More than 80 percent of consortia with consortium-wide definitions reported that taking a vocational course is necessary for a student to be counted as "in Tech-Prep" (Figure V.3). In many of these consortia (42 percent), the course must be articulated to a community college program to qualify as part of the Tech-Prep definition.

Workplace experiences are so far not critical to Tech-Prep participation

Although consortia increasingly view workplace activities as an important component of Tech-Prep programs (see Chapter IV), relatively few consider these activities in defining who is a participant. In both 1994 and 1995, work or training experience at a work site was cited as a key criterion by about one quarter of the consortia with a consortium-wide definition (Figure V.3).

Reported use of workplace experience as a requirement for Tech-Prep participation is probably overstated. The extent to which this criterion is actually applied is unclear. Fifteen percent of the consortia that reported including workplace experience in their definitions indicated in response to another question that they do not currently make workplace experiences available to Tech-Prep students; 40 percent of them do not include work site activities as part of their core program features. These figures underscore the probability that, for some consortia, stated definitions of participation remain a goal and do not reflect current program features.

REPORTED PARTICIPATION

The number of students participating in Tech-Prep remains an important indicator of the extent to which this reform has taken hold. Tech-Prep consortia include as members more than 69 percent of all U.S. secondary school districts, so we might expect substantial numbers of students to be involved in these diverse initiatives. Charting changes in participation is one way to measure implementation progress.

Reporting Capacity

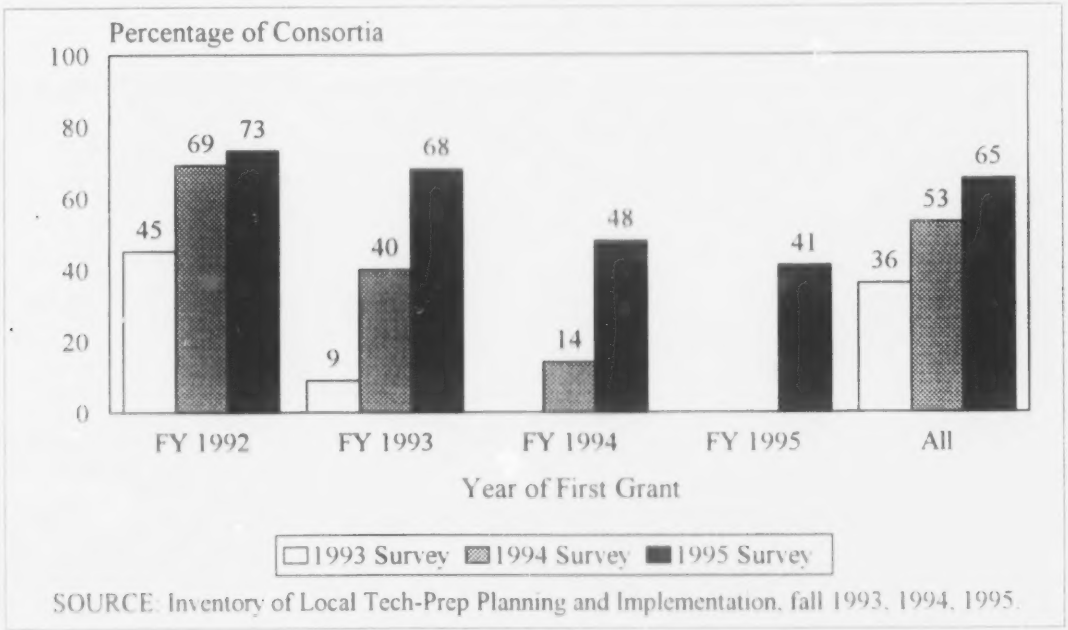
The ability to report counts of Tech-Prep students depends on three factors. First, consortia must develop a concrete way to identify who is a Tech-Prep student. Second, they must put into place the courses and other activities that are the basis for the participation definition. Finally, they must be able to collect data on students involved in Tech-Prep. This last step can be particularly problematic. Even consortia that have developed a definition for Tech-Prep students and that have students participating in the programs as defined may be unable to assemble the information. Member districts may lack computerized files that enable them to determine the number of students meeting the Tech-Prep definition--for example, students who take a vocational course and related applied academic courses. Staff of some consortia may lack the leverage to obtain student-level data from individual member districts.

Ability to report participation has been increasing

Consortia's capacity to report on Tech-Prep student involvement continues to grow. By fall 1995, 65 percent of survey respondents (586 consortia) were able to identify and count students who had participated in Tech-Prep the previous school year. In comparison, 53 percent of consortia in 1994 and 36 percent of consortia in 1993 reported on participation (Figure V.4). In all but 11 states, reporting capacity increased the last year (between 1994 and 1995).

FIGURE V.4

PERCENTAGE OF CONSORTIA THAT REPORTED TECH-PREP PARTICIPATION, BY SURVEY YEAR AND YEAR OF FIRST GRANT



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

Not only can more consortia report on Tech-Prep participation, but they can do so for more of their member districts. Findings from the 1993 and 1994 surveys indicated that reporting capacity in most consortia was limited to a relatively small proportion of their districts. In 1993, the 36 percent of consortia nationwide that could report counts of students did so for only 17 percent of their districts. In 1994, these figures had increased: Tech-Prep participation was reported by 53 percent of consortia and for 29 percent of those consortia's districts. By 1995, 65 percent of consortia and 42 percent of their districts (a total of 3,143 districts) were able to identify the number of Tech-Prep students (Table V.2). Uneven reporting within consortia is common, because districts are often at different stages of development, with only the more advanced districts able to document Tech-Prep participation.

Development stage affects the ability to report student participation

The longer a consortium has been operating, the more likely it is to be able to identify and count Tech-Prep participants. In all three years of the survey, consortia that received their first grants in the early years of Tech-Prep funding were able to report student counts at higher rates than newer grantees (Figure V.4). In addition, in each successive year of the survey, with another year of implementation experience, higher proportions of all consortia were able to report on participation.

This trend bodes well for future implementation of a national system of Tech-Prep performance standards and indicators. Such a system would be infeasible if consortia could not identify and report

TABLE V.2

PERCENTAGE OF TECH-PREP CONSORTIA AND THEIR DISTRICTS THAT REPORTED STUDENT PARTICIPATION IN SCHOOL YEAR (SY) 1992-1993, SY 1993-1994, AND SY 1994-1995, BY STATE

	Percentage of 1993 Survey Respondents that Reported on SY 1992-1993 Participation		Percentage of 1994 Survey Respondents that Reported on SY 1993-1994 Participation		Percentage of 1995 Survey Respondents that Reported on SY 1994-1995 Participation	
State	Consortia	Districts	Consortia	Districts	Consortia	Districts
Alabama	52	31	76	56	88	78
Alaska	0	0	50	50	50	33
Arizona	40	30	60	52	100	83
Arkansas	62	29	88	33	100	66
California	2	1	27	15	62	41
Colorado	23	5	30	11	77	71
Connecticut	56	40	64	38	86	58
Delaware	0	0	100	100	100	80
District of Columbia	100	100	100	100	100	100
Florida	56	39	57	51	88	76
Georgia	30	23	43	36	57	39
Hawaii	0	0	100	100	100	14
Idaho	0	0	67	10	67	15
Illinois	32	13	68	22	72	35
Indiana	62	14	80	41	73	64
Iowa	60	17	30	8	18	6
Kansas	33	10	57	9	58	32
Kentucky	34	26	38	32	51	38
Louisiana	42	36	38	27	92	54
Maine	17	8	50	4	80	21
Maryland	53	44	69	54	73	83
Massachusetts	67	51	91	58	100	84
Michigan	19	11	36	22	48	33
Minnesota	17	3	64	32	79	63
Mississippi	7	4	33	33	7	4
Missouri	0	0	33	13	71	25
Montana	33	5	33	2	20	2
Nebraska	83	30	83	59	50	33
Nevada	100	33	67	56	50	25
New Hampshire	0	0	0	0	25	4
New Jersey	53	30	85	41	86	57
New Mexico	60	45	77	49	64	68
New York	46	34	70	43	77	48

TABLE V.2 *(continued)*

State	Percentage of 1993 Survey Respondents that Reported on SY 1992-1993 Participation		Percentage of 1994 Survey Respondents that Reported on SY 1993-1994 Participation		Percentage of 1995 Survey Respondents that Reported on SY 1994-1995 Participation	
	Consortia	Districts	Consortia	Districts	Consortia	Districts
North Carolina	55	54	76	77	77	82
North Dakota	0	0	0	0	0	0
Ohio	0	0	25	13	46	21
Oklahoma	40	9	60	38	78	75
Oregon	57	61	50	61	40	31
Pennsylvania	28	9	40	24	46	32
Rhode Island	100	100	100	100	100	100
South Carolina	63	73	81	81	94	98
South Dakota	0	0	25	16	50	23
Tennessee	71	54	100	87	93	89
Texas	52	14	71	32	88	58
Utah	38	20	67	38	75	56
Vermont	25	9	67	37	25	33
Virginia	10	2	40	18	65	52
Washington	7	4	45	15	55	26
West Virginia	36	16	54	56	46	40
Wisconsin	42	12	19	9	6	0
Wyoming	33	33	80	53	100	53
Puerto Rico	100	100	100	100	100	100
Virgin Islands	0	0	0	0	100	100
Total	**36**	**17**	**53**	**29**	**65**	**42**

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, and 1995.

on Tech-Prep participants. The survey data indicate, however, that greater operational experience increases consortium reporting capacity. Thus, a performance standard system might be possible over the next several years, as more consortia and their Tech-Prep programs become more established.

Overall Participation

The reported overall number of Tech-Prep students is a composite of participation in programs with very different models and program components. In some consortia, programs "begin" in the 11th grade; in others, they begin in lower grades. Some consortia count students on the basis of participation in a single course, while others count students only if they take a series of courses. Schools in a few consortia consider all students to be included in their Tech-Prep initiatives. The participation statistics reported here are based on each consortium's own definition.

Reported levels of Tech-Prep participation continue to rise

The total number of students identified as Tech-Prep participants has grown each year. Almost 740,000 high school students were participating in Tech-Prep in school year 1994-1995, as reported by 1995 survey respondents (Table V.3). This total represents a substantial increase in participation levels over school year 1993-1994 (432,067 Tech-Prep students) and school year 1992-1993 (172,882).

Three factors contributed to the increase in levels of reported participation each year. Examining in detail the recent growth between 1994 and 1995 illustrates these factors. First, more consortia were in existence and completed the survey in 1995 (897) than did in 1994 (867). However, the average number of Tech-Prep students per reporting consortium also grew substantially during this period (from 941 to 1,259), suggesting that the addition of new consortia cannot fully explain the increase in total participation. Second, reporting capacity increased for consortia that responded in both years of the survey and overall; more consortia included in the 1994 survey and more of their member districts were able to provide counts of students in 1995 than in 1994. Finally, actual enrollments grew. For example, consortia that reported counts of students in both 1994 and 1995 for the same number of districts identified more Tech-Prep participants in 1995 (275,499) than in 1994 (204,192)--a growth rate of 35 percent. On average, these consortia reported 1,366 students in 1995, compared with only 972 in 1994. A similar pattern of growth holds true comparing the increase in student counts between 1993 and 1994.

Participation growth is greatest in urban areas

Expansion of urban Tech-Prep participation continues. There are relatively few consortia located in primarily urban areas, but these consortia include large city school districts that serve many secondary students. Although the absolute numbers of Tech-Prep students increased in all types of locales, participation in urban areas expanded proportionally more in each of the last several years. As a result, the share of reported participants in primarily urban areas increased from 7 percent in SY 1992-1993 to 12 percent in SY 1993-1994 to 16 percent in SY 1994-1995 (Figure V.5). In the last year, the proportional increase in urban participation came at the expense of expansion in rural areas. Participation in rural areas grew at a much lower rate.

TABLE V.3

REPORTING OF STUDENT PARTICIPATION AND OUTCOMES
IN 1993, 1994, AND 1995

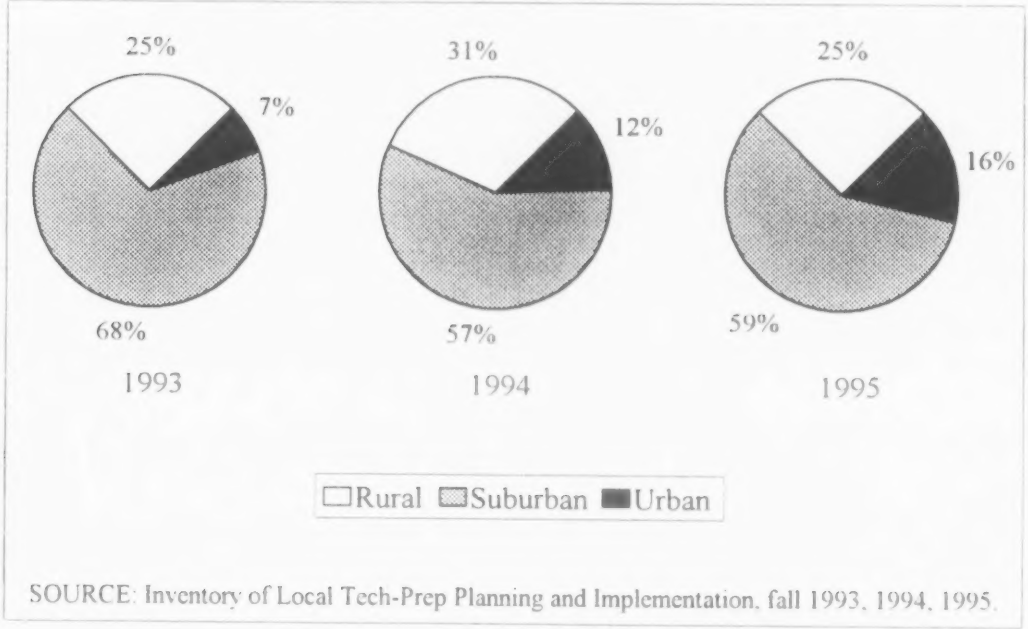
	Consortia Providing Data			Number of Students Reported[a]		
	1993	1994	1995	1993	1994	1995
Overall Questionnaire Completion	702	867	897			
Tech-Prep Participation	250	459	586	172,882	432,067	737,635
Tech-Prep High School Graduates	94	238	334	12,265	43,623	95,509
Employment After High School	33	71	107	892	4,969	10,637
Postsecondary Entry	62	149	205	3,551	14,509	33,867
Community-technical colleges	62	149	205	2,422	9,088	19,138
Four-year institutions	62	149	205	738	4,059	12,054
Other	62	149	205	391	1,362	2,675
Entry to Postsecondary Articulated Occupational Specialty	46	105	150	1,678	6,042	8,439
Completion of Postsecondary Program	8	11	8	274	219	127
Employment After Postsecondary Completion	5	7	3	107	96	82

SOURCE: Inventory of Tech-Prep Planning and Implementation, fall 1993, 1994, and 1995.

[a]Counts of students reported in 1993 refer to school year 1992-1993. Similarly, 1994 and 1995 counts refer to school years 1993-1994 and 1994-1995, respectively.

FIGURE V.5

DISTRIBUTION OF REPORTED TECH-PREP STUDENTS, BY SURVEY YEAR AND METROPOLITAN STATUS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

Tech-Prep students participate in diverse initiatives

As in previous years, students reported as "in Tech-Prep" were involved in programs with quite different designs and implementation approaches (see Table V.1). Of the 726 consortia that reported a consortium-wide participation definition in 1995, 510 (70 percent) were able to report counts of Tech-Prep students; more than 30 definitions were used by these 510 consortia. About one-third of the 510 defined participation in the way that closely resembles participation in a program of study--choosing Tech-Prep as a path, completing a student plan, and taking both applied academic and vocational courses. These 153 consortia accounted for 203,640 students, or 28 percent of all Tech-Prep participants reported (see shaded rows of Table V.1). On the other hand, 11,272 students in eight consortia were counted as Tech-Prep participants solely on the basis of their enrollment in an applied academic course, and 21,269 students were considered in Tech-Prep only because of participation in a vocational course.

Tech-Prep participants continue to represent a small but growing share of the secondary school population

Consortia have enrolled a greater proportion of all U.S. high school students in Tech-Prep initiatives each year since 1993. Despite this growth, however, Tech-Prep participants still represent less than nine percent of the secondary school population. In consortia that reported participation in 1995, Tech-Prep students accounted for 8.4 percent of all secondary students in their member districts (Table V.4). In 1993 and 1994, Tech-Prep students represented 4.7 percent and 7.1 percent, respectively, of all secondary students in reporting consortia's districts.[2]

Thus, so far Tech-Prep can be viewed as a small and perhaps select initiative when compared to vocational education in general. Most high school students earn some credits in vocational education; approximately 30 percent are considered vocational students, having earned at least three credits in one vocational program area (National Assessment of Vocational Education 1994). Tech-Prep initiatives appear to be reaching less than a third the number of students involved in traditional vocational education programs. Among the more than 500 consortia that reported not only the number of Tech-Prep students but also the number of students taking one or more vocational courses in schools with Tech-Prep participants, Tech-Prep students represented about 30 percent of the vocational students in each grade level.

Urban areas may be underserved by Tech-Prep

Despite the expansion in Tech-Prep participation in urban consortia over the years, these consortia involve proportionally fewer students than consortia in other locales. Tech-Prep participants account for a much smaller fraction of all secondary students within central-city consortium districts than within districts in suburban or rural consortia (Figure V.6). In consortia that reported on participation and were located primarily in urban areas, only 4.3 percent of high school students participated in Tech-Prep, compared with 10.0 percent and 9.3 percent in suburban and rural areas, respectively.

The proportion of urban secondary students in Tech-Prep has been increasing, however. Tech-Prep students represented only one percent of high school students in urban consortium districts in 1993 but grew to almost two percent in 1994 and just over four percent in 1995.

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[2]These figures could be regarded as upper-bound estimates of the proportion of all secondary students in consortium districts who were involved in Tech-Prep, if we assume that consortia that did not report on participation had students involved at comparable rates but were simply unable to collect participation data. A lower-bound estimate of participation, alternatively, can be based on the assumption that consortia which did not report on participation had not yet begun to enroll Tech-Prep students. Under this assumption, Tech-Prep students represented approximately two percent of all secondary students in consortium districts in 1993, five percent in 1994, and six percent in 1995.

TABLE V.4

REPORTED SCHOOL YEAR 1994-1995 TECH-PREP PARTICIPATION AS A SHARE OF ALL SECONDARY STUDENTS, BY STATE

State	Total Number of Tech-Prep Secondary Students	Percentage of Consortia Reporting Participation	Tech-Prep Students as a Percentage of All Secondary Students in Reporting Consortia
Alabama	25,897	88	15
Alaska	105	50	10
Arizona	39,803	100	23
Arkansas	6,510	100	11
California	41,721	62	2
Colorado	2,419	77	2
Connecticut	2,634	86	3
Delaware	3,300	100	14
District of Columbia	165	100	1
Florida	32,571	88	10
Georgia	14,843	57	12
Hawaii	1,248	100	3
Idaho	649	67	1
Illinois	24,698	72	9
Indiana	45,818	73	23
Iowa	415	18	34
Kansas	1,890	58	4
Kentucky	17,206	51	24
Louisiana	29,721	92	19
Maine	1,628	80	4
Maryland	24,297	73	20
Massachusetts	13,081	100	9
Michigan	42,530	48	19
Minnesota	29,751	79	21
Mississippi	384	7	10
Missouri	5,411	71	4
Montana	155	20	2
Nebraska	7,872	50	25
Nevada	215	50	2
New Hampshire	233	25	25
New Jersey	9,888	86	5
New Mexico	5,824	64	11
New York	10,939	77	1
North Carolina	36,944	77	25
North Dakota	0	0	--

TABLE V.4 *(continued)*

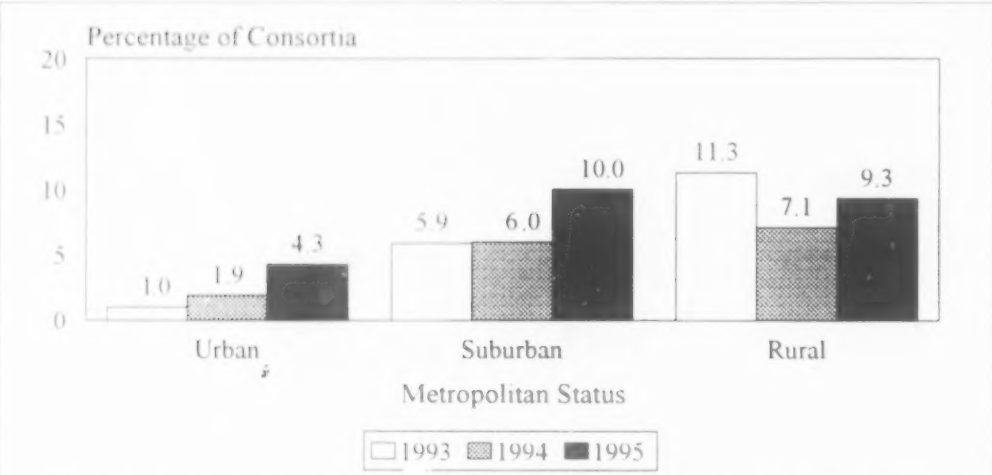
State	Total Number of Tech-Prep Secondary Students	Percentage of Consortia Reporting Participation	Tech-Prep Students as a Percentage of All Secondary Students in Reporting Consortia
Ohio	1,472	46	1
Oklahoma	2,506	78	5
Oregon	6,000	40	29
Pennsylvania	5,537	46	2
Rhode Island	1,551	100	5
South Carolina	55,297	94	33
South Dakota	1,589	50	27
Tennessee	61,145	93	22
Texas	78,664	88	9
Utah	9,595	75	18
Vermont	16	25	0
Virginia	13,092	65	8
Washington	11,893	55	9
West Virginia	2,797	46	7
Wisconsin	469	6	3
Wyoming	4,351	100	24
Puerto Rico	695	100	5
Virgin Islands	201	100	4
Total	**737,635**	**65**	**8.4**

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

NOTE: Two dashes (--) indicate no Tech-Prep students were reported by consortia in the state; thus, a percentage of all students in reporting consortia could not be computed.

FIGURE V.6

REPORTED TECH-PREP PARTICIPATION AS A SHARE OF ALL SECONDARY STUDENTS IN CONSORTIA REPORTING PARTICIPATION, BY SURVEY YEAR AND METROPOLITAN STATUS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.

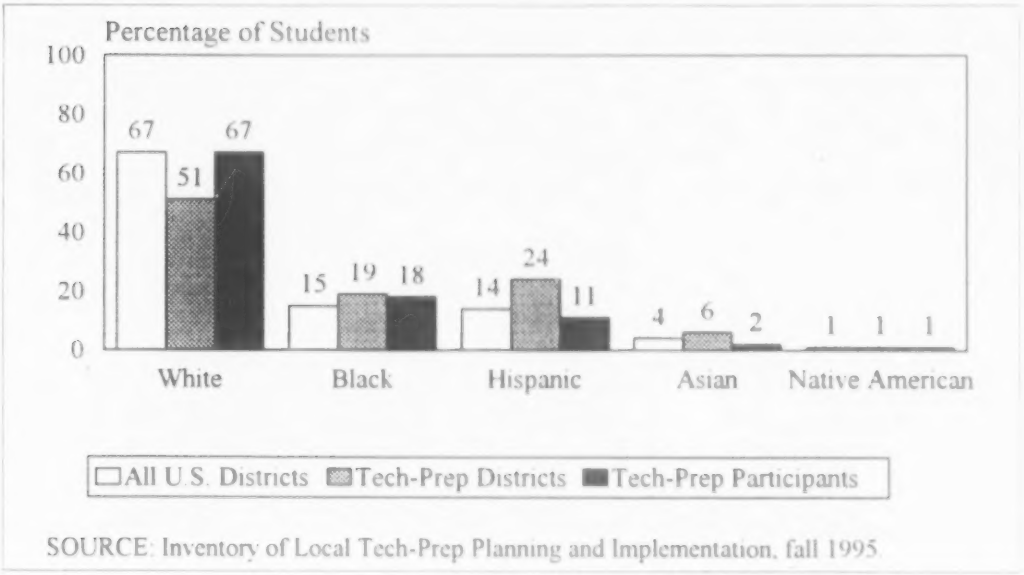
The characteristics of Tech-Prep students remain similar to those of the overall U.S. student population

In terms of socioeconomic and demographic characteristics, Tech-Prep students are similar to high school students across the country (Figure V.7). However, the racial/ethnic composition of Tech-Prep students continues to deviate from that of other students in their own consortium districts. Tech-Prep participants are more likely to be white than the overall student population in Tech-Prep districts. This disparity exists even in urban consortia and in single-district consortia. Thus, neither the greater representation of urban districts in Tech-Prep consortia nor the possibility of uneven reporting across consortium districts seem plausible explanations for the disproportionate enrollment of white students in Tech-Prep programs.

As pointed out in earlier reports, several factors may be contributing to the greater participation of white students in Tech-Prep relative to other students in the same districts. The survey data suggest the greatest disparity in Tech-Prep participation involves Hispanic students: although Hispanic students made up 22 percent of students in Tech-Prep districts in 1995, they were only 11 percent of Tech-Prep participants. A major factor in this disparity is likely to be the dramatically higher dropout rates among Hispanic students, and the fact that among those who do leave school prematurely dropping out occurs on average significantly earlier in high school among Hispanic students than among black or white students (National Center for Education Statistics 1994). Another contributing factor may be that limited English proficiency among recent immigrants is a barrier to participating in technology education, an emphasis of many Tech-Prep programs.

FIGURE V.7

PERCENTAGE OF SECONDARY STUDENTS IN ALL U.S. DISTRICTS, TECH-PREP DISTRICTS, AND TECH-PREP PROGRAMS, BY RACE/ETHNICITY



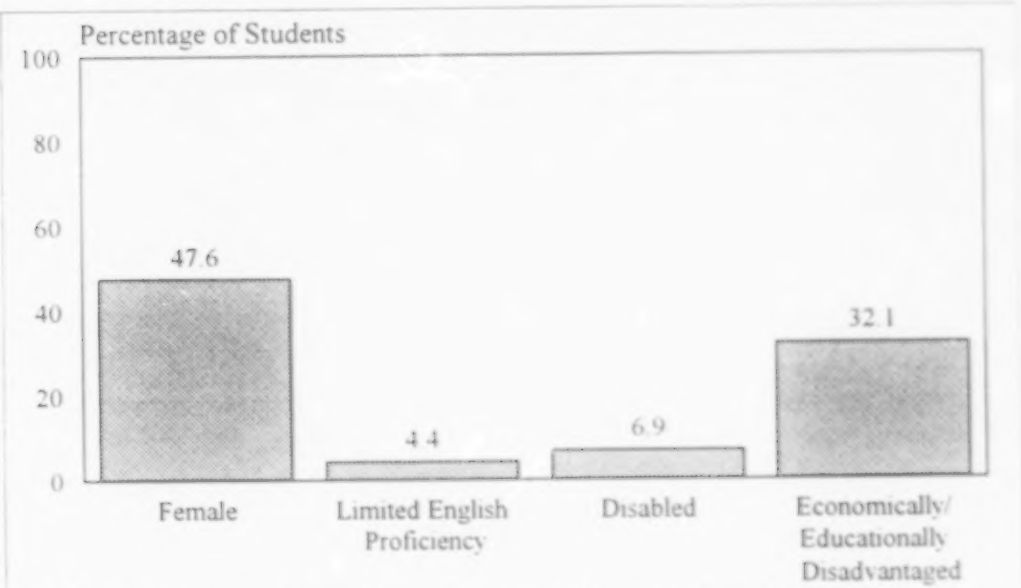
SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995

Despite their differences from other students in Tech-Prep districts, Tech-Prep students are nevertheless generally representative of all students across the country in racial/ethnic identity. Like the overall student population in the United States, close to 70 percent of Tech-Prep participants in 1995 were estimated to be white, just under 20 percent were black, slightly more than 10 percent were Hispanic, about 2 percent were Asian/Pacific Islander, and 1 percent were Native American (Figure V.7). This distribution in Tech-Prep students' demographic characteristics has remained stable since 1993.

Tech-Prep students are also similar to students overall in other characteristics. Consortium coordinators estimated that just under half of all Tech-Prep students in SY 1994-1995 were female, and about one-third were economically or educationally disadvantaged (Figure V.8). Among the Tech-Prep students, approximately four percent had limited English proficiency (LEP) and seven percent had a disability of some kind. Not only are these figures nearly identical across the three years of the survey, but the proportions reported for Tech-Prep students are roughly consistent with those of the overall student population in the U.S. (National Assessment of Vocational Education 1994).

FIGURE V.8

PERCENTAGE OF TECH-PREP PARTICIPANTS REPORTED TO BE FEMALE OR MEMBERS OF SPECIAL POPULATION GROUPS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

Workplace Participation

Examining Tech-Prep student involvement in workplace experiences provides some indication of the extent to which Tech-Prep programs are adapting to the work-based learning goals of STWOA. However, the general availability of workplace activities in consortia and their members' districts (as described in Chapter IV) is not an accurate measure of Tech-Prep students' actual participation in these activities. Many school districts offer work study or cooperative education programs, but relatively few students--and not necessarily those in Tech-Prep--participate. Thus, it is important to analyze more directly how many students identified as Tech-Prep participants are involved in some type of workplace experience.

Documenting Tech-Prep student involvement in workplace activities is difficult, however. In 1995, 35 percent of consortia did not identify and count the students participating in Tech-Prep and thus could not be expected to report the number of these students in workplace experiences. Many other consortia either simply do not track student workplace participation or are unable to determine which students involved in workplace experiences are also Tech-Prep participants.

Ability to document Tech-Prep student participation in workplace experiences remains limited

Consortia continue to have difficulty in collecting information on the number of Tech-Prep students in workplace activities. Most consortia did not provide counts of Tech-prep workplace participants. Of the 734 consortia that reported making workplace experiences available for Tech-Prep students during the 1994-1995 school year, only 521 were able to report the number of students in Tech-Prep, and of them only 380 were able to record the number of those students participating in workplace experiences. The remaining 141 consortia reporting Tech-Prep students probably did not have the procedures in place to determine which students, if any, were involved in these activities.

As in the previous year, even consortia that could document Tech-Prep workplace experiences had limited capabilities to do so. For example, of the 380 consortia that documented workplace participation overall, 221 reported the number of Tech-Prep students involved in worksite visits. However, these consortia could report for only 690 districts, about half the 1,332 districts for which they had counts of Tech-Prep students, or just over one-third of their 1,915 consortium districts overall (Table V.5). The proportion of consortium districts that could report on other types of workplace activities (such as paid after-school positions or unpaid internships during the school year) was even smaller.

Capacity to report on Tech-Prep workplace participation has grown, however. The total number of consortia and districts that can document this involvement grew between 1994 and 1995. More consortia could provide data on Tech-Prep students in work site visits in 1995 (221) than in the previous year (144). In addition, a higher number and proportion of districts in these consortia counted Tech-Prep students in this activity in 1995 (690, 36 percent) compared to 1994 (406, 30 percent).

Growing numbers of Tech-Prep students are involved in workplace activities

More Tech-Prep students seem to be participating in workplace activities as more consortia become established and develop reporting capacity. A variety of activities are considered work-based learning opportunities in STWOA, and Tech-Prep students were involved in them to a greater extent in 1995 than in 1994 (Figure V.9). For example, more than 50,000 Tech-Prep students participated in work site visits in 1995, compared with about 24,000 in 1994. The most substantial increase in the level of Tech-Prep workplace participation was in after-school jobs in positions related to students' occupational programs; more than 25,000 Tech-prep students were involved in these positions in 1995, while just over 9,000 Tech-Prep students had similar positions in 1994.[3] Fewer students were involved each year in other types of workplace opportunities. Some Tech-Prep students probably participated and were counted in more than one activity each year.

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[3]These paid positions could include jobs associated with cooperative education, work-study, or youth apprenticeship programs.

TABLE V.5

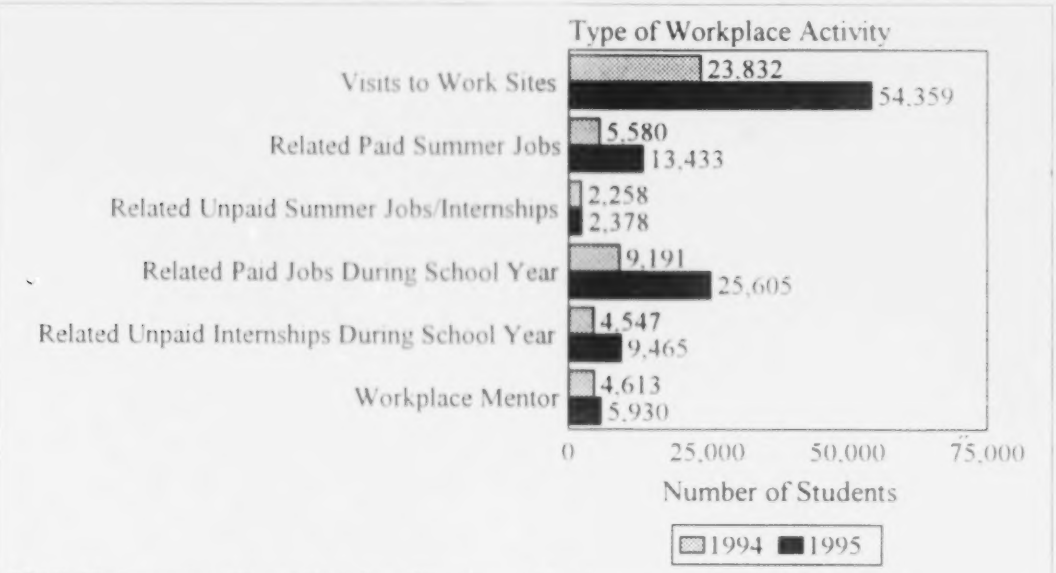
CONSORTIUM ABILITY TO REPORT ON WORKPLACE PARTICIPATION, BY TYPE OF WORKPLACE ACTIVITY

Type of Activity	Number of Consortia Providing Data on Workplace Participation	Total Number of Districts in Reporting Consortia	Number of Consortium Districts that Count Tech-Prep Students	Number of Districts that Count Tech-Prep Students in Workplace Activities
Work-Site Visits	221	1,915	1,332	690
Paid Summer Jobs	161	1,482	1,058	403
Unpaid Summer Jobs/Internships	76	818	581	155
Paid Part-Time School Year Jobs	211	1,822	1,310	622
Unpaid School Year Jobs/Internships	135	1,301	885	351
Assignment to Workplace Mentors	124	1,203	865	307
Other	12	123	95	15
Any Type	259	2,230	1,559	918

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995

FIGURE V.9

NUMBER OF TECH-PREP STUDENTS PARTICIPATING IN SPECIFIED WORKPLACE ACTIVITIES, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994 and 1995.
NOTE: The number of Tech-Prep students in workplace activities was not collected in the 1993 survey.

Only a small fraction of Tech-Prep students are so far involved in workplace activity

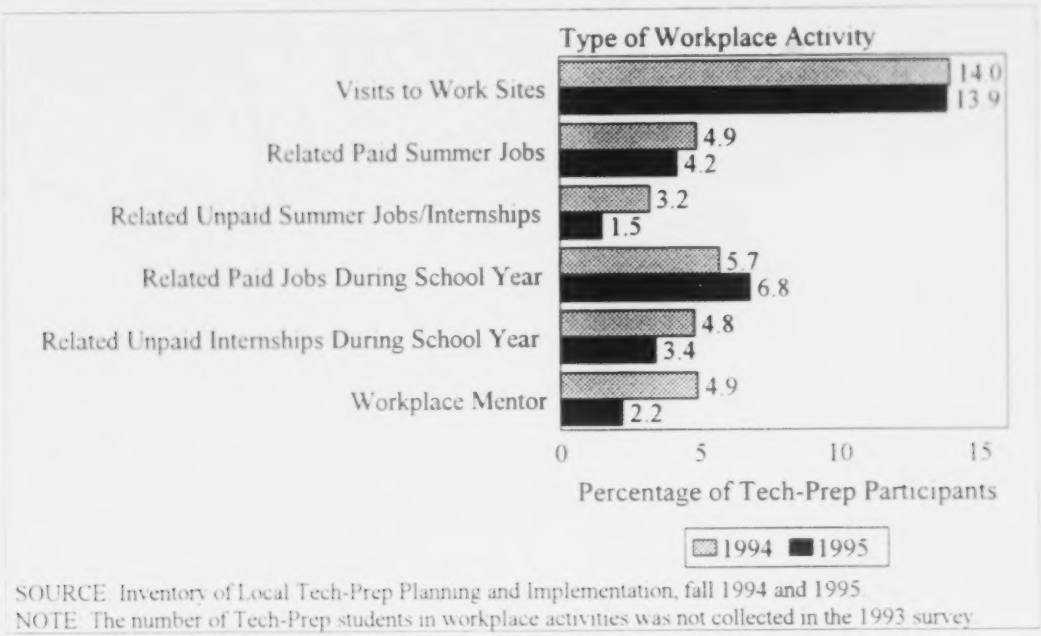
Increasing the scale of Tech-Prep workplace experiences remains a substantial challenge. Consortia in 1995 were still quite far from achieving widespread involvement of Tech-Prep students in these experiences. Among consortia that reported on Tech-Prep participation in workplace activities in 1994 and 1995, the proportion of Tech-Prep students involved was quite small (Figure V.10). The largest group of Tech-Prep students (14 percent in both 1994 and 1995) was involved in visits to employer work sites. Almost six percent of Tech-Prep students in 1994 and close to seven percent of Tech-Prep students in 1995 had paid school-year jobs related to their school-based occupational program.

STUDENT OUTCOMES

Students in Tech-Prep programs are expected to develop high-level academic and technical competencies, pursue postsecondary education and training as needed, and obtain well-paying, career-oriented jobs. Although all these outcomes are of interest, only a few can be measured using aggregate data on groups of students, such as the data from the annual Tech-Prep consortium survey.

FIGURE V.10

PERCENTAGE OF TECH-PREP PARTICIPANTS IN SPECIFIED WORKPLACE ACTIVITIES, BY SURVEY YEAR



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1994 and 1995.
NOTE: The number of Tech-Prep students in workplace activities was not collected in the 1993 survey.

High school graduation, postsecondary education transitions, and employment can be examined, with some limitations, however.[4] Many consortia--35 percent of those in 1995 and an even higher percentage in earlier years--could not identify who is a Tech-Prep student. Clearly, consortia that could not identify and count participants would be unable to report the number of Tech-Prep students achieving key outcomes. Moreover, most consortia face logistical obstacles in collecting data on students once they leave high school. Thus, computed rates of Tech-Prep students' transitions to postsecondary activities are based on a small subset of all consortia.

Consortium ability to track Tech-Prep student outcomes is still limited, but improving

Many consortia do not have the capacity to document Tech-Prep student progress (see Table V.3). Of the 586 consortia that reported 12th-grade Tech-Prep enrollments for SY 1994-1995, 43 percent could not report how many had graduated from high school. The 334 consortia that did report on graduation of Tech-Prep students could do so for only about three-quarters of the districts for which they could count Tech-Prep participants and only half their member districts overall.

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[4]Surveys cannot effectively collect information on other important outcomes, such as students' skill levels or grades, because they are measured, computed, and interpreted differently across localities.

Information on students' postsecondary experiences is even more limited by reporting rates. In 129 of the 334 consortia that reported Tech-Prep high school graduates in 1995, coordinators could not report what happened to those students after graduation. Only 107 consortia could document post-high school employment of Tech-Prep graduates. These difficulties reflect both the newness of some Tech-Prep initiatives and a more general lack of systems to collect data across secondary and postsecondary educational institutions or from employer wage reports.

Capacity to track student outcomes is slowly improving. Across all the outcomes measured, higher proportions of consortia reported students counts in 1995 than in 1994. For example, the proportion of consortia that could document high school graduation increased from 52 percent in 1994 to 57 percent in 1995. Moreover, the consortia that could report on graduation of Tech-Prep students had counts of graduates from a higher proportion of their member districts in 1995 (50 percent) than in 1994 (41 percent).

Consortia continue to report higher numbers of Tech-Prep high school graduates

Each year, consortia report more Tech-Prep students graduating from high school. More than 95,000 Tech-Prep students in 334 consortia were reported as graduating from high school in spring 1995 (see Table V.3). This number represents a substantial increase over the approximately 43,000 Tech-Prep high school graduates reported by 238 consortia a year earlier and over the 12,000 spring 1993 graduates reported by only 94 consortia that year. The average number of Tech-Prep high school graduates in each reporting consortium has also grown--from 130 in spring 1993 to 183 in 1994 to 286 in 1995. Large increases were observed even when we took into account potential bias due to differences in reporting capacity.[5] This growth is probably the natural result of the increase in students who advanced through Tech-Prep programs that began in 10th or 11th grade.

Not surprisingly, almost all students who reach their senior year as Tech-Prep students graduate from high school. The 95,509 spring 1995 Tech-Prep graduates represented 84 percent of the reported Tech-Prep seniors in those 334 consortia. However, those consortia were able to report counts of Tech-Prep seniors in more districts than they could report on graduation of Tech-Prep students. It is virtually certain that many of these nonreporting districts actually graduated Tech-Prep seniors since, nationally, more than 90 percent of all seniors graduate.[6] If we assume the nonreporting districts graduated the same proportion of Tech-Prep seniors as districts that did report, then the senior graduation rate approaches 100 percent.

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[5]However, for consortia that could report in both 1994 and 1995 for the same number of districts, the computed growth in number of Tech-Prep graduates was about 90 percent, not the 120 percent increase observed for the 1994 and 1995 respondents as a whole.

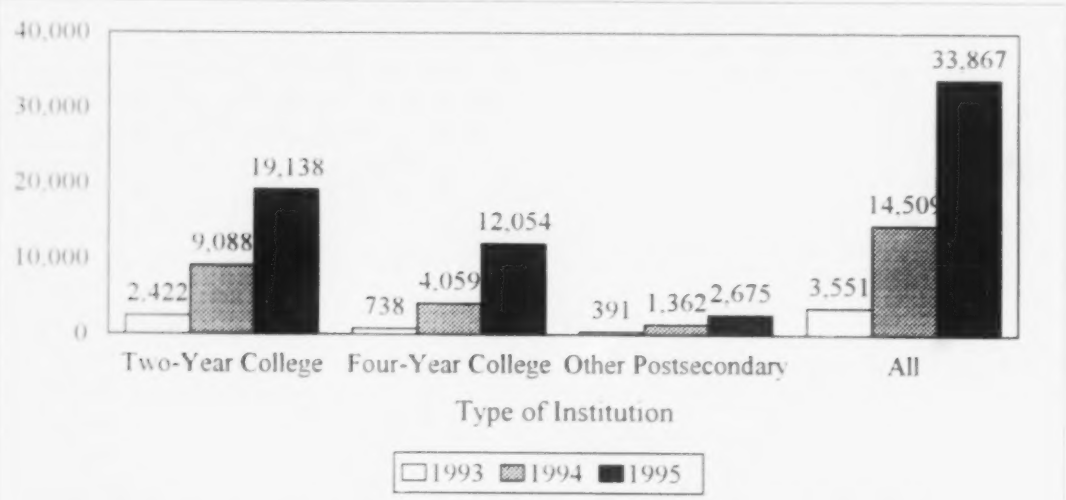
[6]This figure was computed using data from the NCES Common Core Database.

Postsecondary education and training remains a common pathway for many Tech-Prep high school graduates

The reported number of Tech-Prep students entering postsecondary activities has increased significantly each year, but the proportion of students making this transition remains relatively constant. In 1995, 205 consortia reported that 33,867 Tech-Prep high school graduates entered postsecondary educational institutions or training programs that fall (Figure V.11). In comparison, the 149 consortia that could track postsecondary entry of 1994 Tech-Prep graduates reported a total of 14,509 graduates beginning postsecondary activities in fall 1994. The number of Tech-Prep students reported as entering these activities in 1993 was even smaller (3,551). The higher number of Tech-Prep postsecondary enrollees in later years is partly the result of improved reporting capacity and partly of true growth in postsecondary entry; the average number of postsecondary Tech-Prep students increased from 57 students in 1993 to 165 in 1995.

FIGURE V.11

NUMBER OF TECH-PREP HIGH SCHOOL GRADUATES ENTERING POSTSECONDARY EDUCATION OR TRAINING IN FALL 1993, 1994, AND 1995, BY TYPE OF INSTITUTION



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1993, 1994, 1995.
NOTE: Other postsecondary institutions include proprietary schools, registered apprenticeships, and the armed forces.

About half of all Tech-Prep high school graduates seem to enter some type of postsecondary education and training each year. In 1995, the computed postsecondary transition rate was 57 percent; the comparable rate was 56 percent in 1994 and 49 percent in 1993. It is important to interpret these data with some caution, however. Consortia that were able to report on postsecondary activities of Tech-Prep students each year make up a small proportion of consortia overall (23 percent, 17 percent, and 9 percent, respectively, in 1995, 1994, and 1993). However, consortia that were able to track

postsecondary entry of Tech-Prep students claimed to be able to do so in virtually all the districts in which they could track students' graduation from high school. Therefore, reports on postsecondary entry should not be biased by missing districts' information.

Tech-Prep students are increasingly choosing to attend four-year institutions

Although most Tech-Prep students who pursue postsecondary education are enrolled at community or technical colleges, four-year institutions are becoming a more common choice. The number of Tech-Prep high school graduates who reportedly began a four-year postsecondary program increased substantially each year (Figure V.11). More than 12,000 Tech-Prep students entered four-year colleges or universities in fall 1995, compared to just over 4,000 in fall 1994 and only 700 in 1993.

These increases in four-year institutional attendance are largely the result of growth in the overall number of students entering postsecondary education or training. However, Tech-Prep students are increasingly choosing four-year institutions over other postsecondary options. The proportion of Tech-Prep postsecondary enrollees who were entering four-year colleges or universities rose each year--from 21 percent in 1993 to 28 percent in 1994 to 36 percent in 1995.

Entry into articulated postsecondary programs is declining

Since 1993, Tech-Prep community college students have been increasingly less likely to enroll in articulated occupational programs, preferring instead general academic transfer programs or occupational programs that are not linked to secondary Tech-Prep sequences. In 1993, about 80 percent of Tech-Prep community college students entered articulated specialty programs. The comparable figure dropped to 76 percent in 1994 and 60 percent in 1995. Clearly, this decline is most striking between 1994 and 1995, at the same time that Tech-Prep students' entry into four-year baccalaureate programs rose dramatically.

These data suggest that Tech-Prep programs may have become less focused on creating structured pathways that lead to associate degree programs. In part, this shift reflects consortia's attempt to overcome the "tracking" concerns about Tech-Prep expressed by parents, students, and counselors and the fear that articulated Tech-Prep sequences will lock students into narrow education and career options. Site visits to the in-depth study consortia also indicate several factors can impede students' immediate entry into articulated occupational programs. Long waiting lists for associate degree programs, in business and health particularly, can lead students to enter general programs initially, with the hope of completing academic requirements for occupational programs. In addition, many students, including some in Tech-Prep, fail to meet the academic proficiency levels some community college programs require; these students are likely to enroll in developmental or remediation courses for at least the first postsecondary semester.

Reporting on employment of Tech-Prep high school graduates remains limited

According to the small number of consortia that document this outcome, the proportion of Tech-Prep students who obtained jobs related to their occupational program within about six months of graduation varies each year. For example, the 107 consortia in 1995 that reported on student employment identified a total of 10,637 students in full-time or part-time jobs, or 27 percent of the reported Tech-prep high school graduates in those 107 consortia. In contrast, one-third of graduates in reporting consortia were employed in 1994, and only 22 percent of 1993 graduates were employed.

However, not surprisingly, these numbers are based on very limited reporting capacity. In 1995, only 12 percent of consortia reported on employment of Tech-Prep graduates, and they did so for only about a third of their member districts. Even lower proportions of consortia and districts were able to report this type of information in previous years. Constraints in reporting on post-high school employment is likely to persist, because few communities have institutional arrangements that enable them to obtain wage reports for particular students.

VI. LOCAL EVALUATION OF TECH-PREP IMPLEMENTATION

Most states require Tech-Prep consortia to document their planning and implementation activities. Although Title IIIE of the Perkins Act does not require consortia to conduct program evaluations, many states have established procedures for Tech-Prep consortia to report on their progress and, in some cases, on student participation and outcomes. Some consortia undertake local evaluations using a formal, prescribed process or set of standard measures. Others rely more on ad hoc narratives of implementation activity and expected outcomes. Local efforts to assess their operations, as well as coordinators' own views of consortium success and obstacles, play an important role in measuring Tech-Prep development, even at a broader, national level.

In this chapter we describe local collection and use of evaluation data and coordinators' general observations about Tech-Prep implementation progress. First, we discuss the status of evaluation plans, the creation of student databases, and approaches to gathering and analyzing data. We then present coordinators' perceptions of consortium accomplishments to date and barriers to further Tech-Prep development.

TECH-PREP DATA COLLECTION AND ANALYSIS

Tech-Prep consortia collect various types of evaluation data and use them in different ways. Participation, outcome, and process measures can be used for program improvement purposes--for example, to identify Tech-Prep elements or procedures that require additional attention or corrective steps. Certain qualitative and quantitative information can be useful in marketing the Tech-Prep program or recruiting important partners such as employer or parent groups. Program data also provide a basis for responding to requests for information and status reports from funders, including school boards, business and industry groups, and state and federal agencies.

Several factors might be expected to increase consortium efforts to collect and analyze Tech-Prep data over the past several years. State and federal interest in establishing performance measures for particular initiatives is growing, and local coordinators will be expected to provide the data underlying these indicators. Federal block grants for education and training are also a possibility, making solid documentation of progress important for any program, as different constituencies face the prospect of competing for funding.

Most but not all consortia have a plan for evaluating Tech-Prep

Local plans for evaluating Tech-Prep implementation and outcomes are fairly widespread, but the prevalence of these plans has changed little in the last few years. In 1995, 71 percent of consortia reported intentions to assess their Tech-Prep initiatives, compared to 69 percent of consortia in 1993. In 1995, newer consortia--those that received their first Title IIIE grants in FY 1994 or FY 1995--were more likely to report evaluation plans than consortia that received their first grants earlier (77 percent versus 70 percent). This result is somewhat surprising, because we might expect newer consortia to be distracted from evaluation planning by the need to put Tech-Prep components into place, while established consortia would have more time to develop data collection and analysis

strategies. However, state agencies may have required new grantees to include an evaluation plan in their grant proposals.

However, the extent to which any intentions to evaluate Tech-Prep become a reality is unclear. Some consortia (102) that reported plans in 1993 or 1994 dropped this objective by 1995. More than one-quarter of consortia with plans to assess implementation and outcomes were still unable to report numbers of Tech-Prep students in FY 1995. Consortia probably start out with ambitions to evaluate their progress, but the impetus or ability to do so diminishes over time.

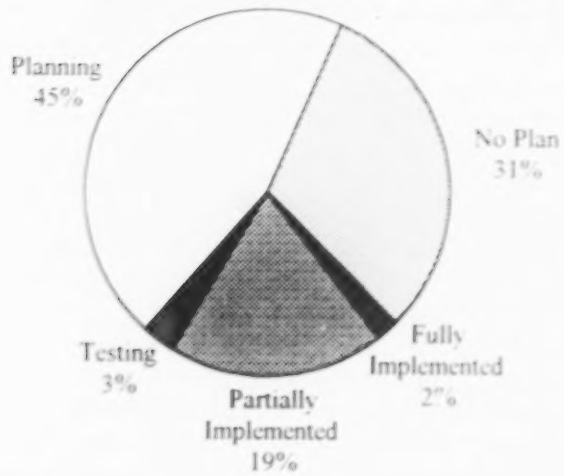
Many consortia are planning Tech-Prep student databases, but have so far taken little action

Program evaluation strategies often include planning for or implementing computerized databases that contain information on individual participants and allow program staff to track their progress. This strategy is common among Tech-Prep consortia: in 1995, almost 70 percent of consortia reported that they expected to develop or had already developed data files that include information on Tech-Prep students. The computerized systems reported by consortia could be extensions or additions to existing student databases or stand-alone systems for Tech-Prep students only.

Despite ambitious plans for developing Tech-Prep student databases, relatively few consortia had actually done so by fall 1995 (Figure VI.1). Most consortia were still in the planning stages. Only 21 percent of consortia reported that their student databases have been even partially implemented, with just 22 consortia (2 percent) having fully implemented databases. Even most older consortia--

FIGURE VI.1

PERCENTAGE OF CONSORTIA WITH TECH-PREP DATABASES, BY STAGE OF IMPLEMENTATION



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

those that received their first Title IIIE grants in FY 1992 or FY 1993--were still planning information systems that could include Tech-Prep students. Some of these established consortia had, by 1995, abandoned earlier plans to develop databases. Among consortia that had at least partially implemented a database by fall 1995, only 80 percent were able to report numbers of students in Tech-Prep the previous year.

Most database designs continue to focus on documenting secondary transcript information

The Tech-Prep student databases that do exist are probably often the result of fine tuning of traditional computerized school records. Consortia that are testing or implementing data files include high school transcript data more often than any other type of student data. Vocational and academic courses taken or completed and grades attained were the most common items reportedly included in databases (Table VI.1). Program enrollment by career cluster or occupational specialty was cited as an element of student databases almost as frequently; these data are also likely to be based on transcript information, since clusters are often defined according to courses taken. Postsecondary data are less likely to be included in Tech-Prep student databases.

Documentation of work-related information continues to be relatively rare. In 1995, about one-third of the 215 consortia that were testing or implementing student data files recorded information about Tech-Prep work experiences or postprogram job placement, and about 14 percent recorded wages. Newer consortia are more likely to include information on workplace experiences, job placement, and wages in their Tech-Prep databases, perhaps because they began planning their databases later, in a time of increased emphasis on work-based learning.

- The prevalence of particular database items in the computerized files that consortia are testing or have already implemented did not change much between 1993 and 1995. However, some older consortia dropped plans to include certain types of data, like technical competencies and program enrollment.

Almost all consortia gather information for reporting or program improvement purposes

In 1995, most consortia (93 percent) engaged in some type of information gathering about program implementation, regardless of the status of their evaluation plans or student databases. These consortia reported conducting discussions with program staff and students, classroom observations, student surveys, or reviews of existing data files; most used several different sources of data. The high rate of data collection activity among consortia that lack Tech-Prep evaluation plans suggests that some data gathering is conducted either informally or as part of larger data collection efforts not targeted to provide information on Tech-Prep students specifically.

Consortia emphasize qualitative data over quantitative data. Most consortia relied on information obtained through informal conversations with staff rather than data collected on students. More than 70 percent of consortia reported holding small group discussions with consortium staff or governing board members, teachers or counselors, and other key staff such as school administrators or employers (Figure VI.2). In contrast, only about 40 percent of consortia collect and track data on outcomes of Tech-Prep students or outcomes of the overall student population in consortium districts.

TABLE VI.1

ELEMENTS INCLUDED IN TECH-PREP STUDENT DATABASES

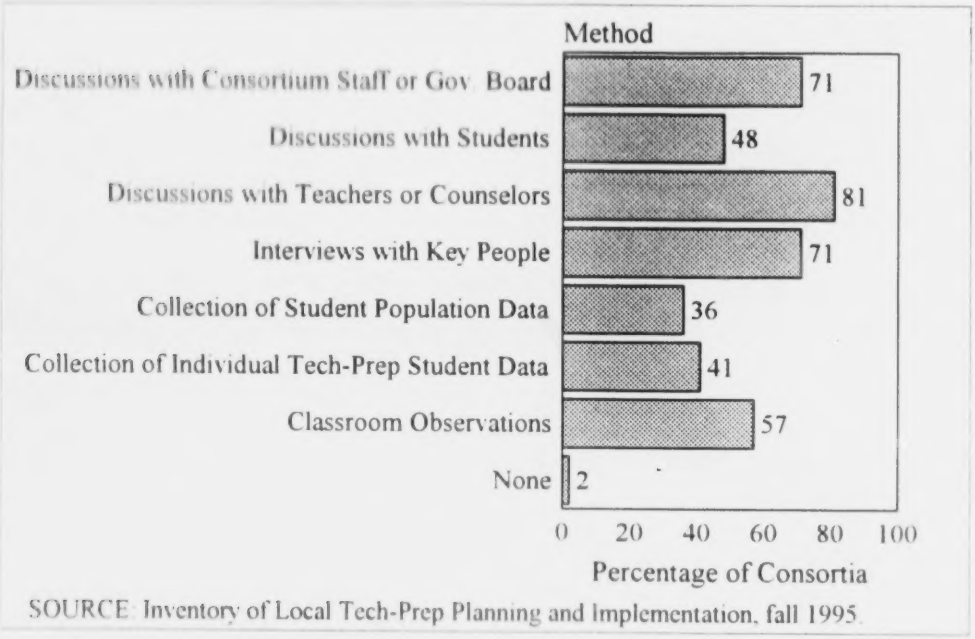
Data Element	Percentage of Consortia Collecting or Planning to Include Data*	
	For Secondary Students	For Postsecondary Students
Academic Courses Taken/Completed	69	42
Vocational/Occupational Courses Taken/Completed	86	50
Technical Skills/Competencies Attained	36	21
Grades	71	43
Career Counseling Services Received/Used	27	11
Level of Remediation Required	23	31
Program Enrollment by Career Cluster or Occupational Specialty	66	44
Diploma/Degree/Certificate Attainment	63	46
Workplace Experiences as a Part of Tech-Prep	33	12
Job Placement Data (for example, Placement in Occupations Related to the Course of Study)	29	21
Wage/Salary Data	14	14
Employer Satisfaction Information	14	12

SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

*Table entries are percentages of those consortia that reported currently testing or implementing a database to monitor outcomes of Tech-Prep students. Overall, these consortia represent 24 percent of all consortia responding to the survey.

FIGURE VI.2

DATA COLLECTION METHODS USED FOR EVALUATION BY TECH-PREP CONSORTIA



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

COORDINATORS' PERCEPTIONS OF TECH-PREP PROGRESS

Consortium coordinators' own views of implementation provide an important perspective on Tech-Prep progress. Their observations of the successful aspects of Tech-Prep development and the major barriers they face offer two types of useful evaluation information. First, reports of obstacles to further development may help to identify issues that can be addressed by state or federal policy. Second, coordinators' opinions of consortium accomplishment, combined with actual measures of implementation status, provide a more comprehensive picture of national efforts and the emphasis placed on different components.

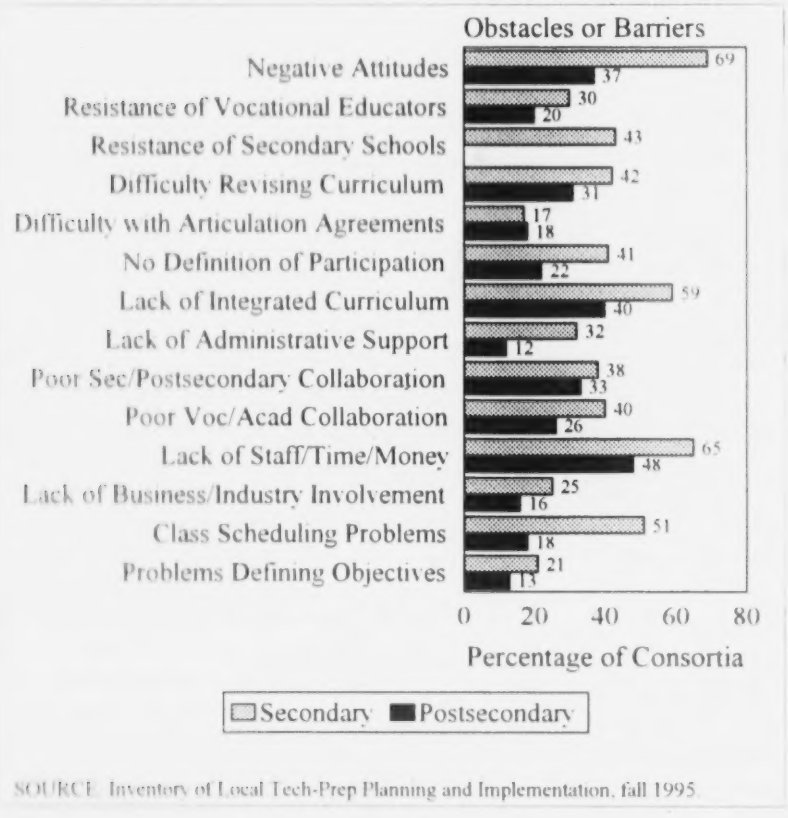
Overcoming the stigma of vocational education is most often a significant challenge

Tech-Prep implementation continues to be hindered by negative attitudes toward vocational education. Consortium coordinators in the national evaluation's in-depth study sites report that some parents, teachers, counselors, and students believe that technical education not only leads to poor academic preparation and dead-end jobs but also closes off opportunities for the preferred baccalaureate degree. Because Tech-Prep programs are associated with career preparation and in many communities are built around existing occupational course offerings, Tech-Prep consortia often face the same marketing hurdles as traditional vocational education. As a result, Tech-Prep programs may receive less priority among school options and have difficulties recruiting appropriate, interested

students and faculty. In fall 1995, almost 70 percent of consortia reported that negative opinions of vocational education and/or Tech-Prep were a barrier to implementation at the secondary level, and 37 percent reported so at the postsecondary level (Figure VI.3).

FIGURE VI.3

REPORTED PROBLEMS IN IMPLEMENTING TECH-PREP AT THE SECONDARY AND POSTSECONDARY LEVELS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

Concern among Tech-Prep coordinators about such negative attitudes seems to have increased as Tech-Prep programs have matured. A higher proportion of consortia reported struggling with this challenge in 1995 than in 1993 or 1994, even among just those consortia that responded in all three years of the survey. The increasing prevalence of this barrier suggests that Tech-Prep consortia are making little progress toward overcoming the impact of this particular problem on their program operations.

Changing curricula to meet Tech-Prep objectives remains difficult

Consortia continue to face substantial barriers in trying to introduce Tech-Prep curriculum reforms. In 1995 as well as 1993, nearly 60 percent of consortia reported that developing a truly integrated curriculum--in which students' academic and vocational instruction is linked to create career-focused programs of study--is a major implementation challenge (Figure VI.3). Several factors appear to contribute to this ongoing problem. More than 40 percent of consortia in 1995 experienced difficulties in revising curricula. Many found that making changes to existing curricula met with resistance from secondary schools. About 40 percent of consortia cited poor collaboration between vocational and academic educators as an obstacle to full implementation of Tech-Prep reforms.

The logistical aspects of creating programs of study are also an ongoing challenge. To implement Tech-Prep as a sequence of related, integrated academic and vocational courses, class schedules must be configured so that students can actually enroll in the relevant courses. However, more than half the consortia in 1995 reported that constraints or conflicts in scheduling secondary classes was a major problem. It might be expected that difficulties in arranging Tech-Prep course schedules would diminish as the programs became more established. In fact, however, a somewhat higher proportion of consortia in 1995 compared to 1993 reported facing this barrier, and even older consortia that responded to all three years of the survey increasingly reported course scheduling as a problem.

Insufficient resources are still viewed as a pervasive problem

As in previous years, many consortium coordinators in 1995 felt that additional staff, time and funds were needed to fully develop their Tech-Prep initiatives. In 1995, about two-thirds of consortia reported a lack of resources as a major obstacle to continuing and expanding Tech-Prep programs (Figure VI.3). One coordinator elaborated on this point, citing overcrowded classes, a lack of facilities, insufficient staff development, and a hiring freeze as challenges to be overcome in institutionalizing Tech-Prep. Of course, many of these problems are common to school systems in general, and are not specific to Tech-Prep. With an average grant to Tech-Prep consortia of approximately $100,000, it is unlikely that Tech-Prep can address these broader resource issues.

Still, many coordinators view expenditures for certain purposes as critical and directly related to the success of their Tech-Prep programs--staff development on applied learning, replacement equipment and materials for applied learning courses, release time for faculty to develop and/or align curricula (including reviewing articulation agreements), and, of course, consortium coordination. Consortia with smaller Title IIIE grants were more likely to report a lack of resources as a barrier to Tech-Prep than were consortia with grants larger than $100,000.

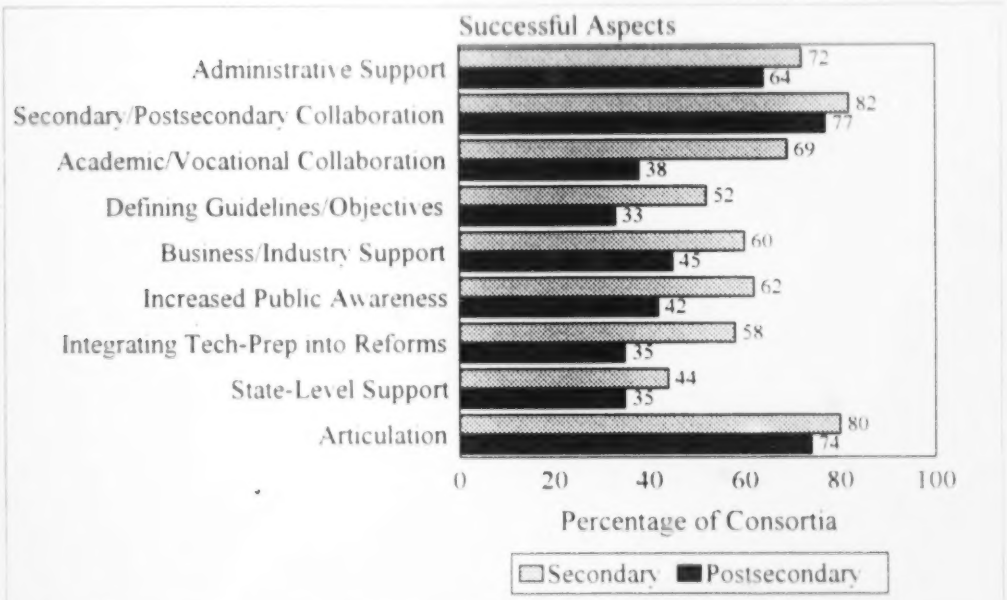
Lack of resources is a somewhat less widespread problem in 1995 than in previous years, however. A lower proportion of consortia in 1995 reported this as an obstacle, compared with consortia in 1993 (65 percent and 71 percent, respectively). A similar decline was evident even among consortia that responded to the survey in all three years. Two factors may account for the lesser emphasis on funds as an obstacle to Tech-Prep implementation. First, many consortia or their members are receiving grants under STWOA; these funds can be and in many communities are used in ways that complement or supplement Tech-Prep activities. Second, start-up costs associated with Tech-Prep may have diminished, allowing consortia to continue implementation or expansion without substantial increases in funding.

Creating secondary-postsecondary linkages is most often viewed as a major accomplishment

Consortia increasingly believe they have been most successful in making progress towards the primary Tech-Prep goal. Title IIIE of the Perkins Act promotes "strong, comprehensive links between secondary schools and postsecondary educational institutions" and emphasizes the importance of articulation agreements in Tech-Prep programs of study. Advances in these two aspects of Tech-Prep implementation were most commonly cited by local coordinators as important achievements of their consortium efforts at both the secondary and postsecondary levels (Figure VI 4). Moreover, the proportion of consortia reporting these components as successful rose substantially between 1993 and 1995. For example, only about half the consortia in 1993 viewed secondary-postsecondary collaboration as successful, while more than 80 percent of consortia in 1995 did so.

FIGURE VI 4

MOST SUCCESSFUL ASPECTS OF TECH-PREP AT THE SECONDARY AND POSTSECONDARY LEVELS



SOURCE: Inventory of Local Tech-Prep Planning and Implementation, fall 1995.

This positive emphasis on secondary-postsecondary linkages is not surprising. Many consortia were building on previous experience with articulation that began even before they received Title IIIE grants, and most also signed new agreements in the past two years (see Chapter IV). Very few consortia reported difficulties in negotiating these arrangements (Figure VI 3). Those with a long record of articulation were most likely to consider this component to be a major Tech-Prep achievement.

Consortia indicate some momentum in gaining business/industry support

Most consortia receive some support from business, industry, and labor groups and are increasingly satisfied with their efforts to encourage private-sector participation. Relatively few consortia reported a lack of business and industry involvement in Tech-Prep as an obstacle to implementation (Figure IV.3). In fact, 60 percent of consortia in 1995, compared with 50 percent in 1993, reported that obtaining this involvement at the high school level was one of the greatest successes of Tech-Prep development so far.

The increasing proportion of Tech-Prep consortia that rate themselves successful in encouraging business and industry participation bodes well for development of STW systems. Many STW partnerships will be built on relationships already established between educators and the private sector through early initiatives like Tech-Prep. STWOA, much more so than the Tech-Prep legislation, relies on employers, trade associations, and unions to make major contributions to educational reforms.

Coordination between Tech-Prep and other reforms may have increased somewhat

Many consortium members are involved in other local, state, and federal education and training initiatives in addition to Tech-Prep. Since the late 1980s, increasing numbers of states have enacted laws and begun to implement state education reform agendas, rolling out to local Tech-Prep communities new curriculum frameworks, career development guidelines, graduation requirements, and proficiency tests. Interest in combining education and training programs into a larger workforce development system has led in some states to creation of regional workforce development boards that are expected to have broad authority over local Tech-Prep funds and strategies. STW partnerships and system components are being developed in many of the communities that have existing Tech-Prep consortia and programs. Numerous locally driven school reforms are also underway.

Linkages between Tech-Prep and at least some of these broader initiatives are improving, according to consortium coordinators. A somewhat higher proportion of coordinators in 1995 (58 percent), relative to those in 1993 (51 percent), rated their efforts to integrate Tech-Prep into other reforms as very successful aspects of implementation, particularly at the secondary level. These views were equally prevalent among older and newer consortia.

Consortium coordinators report multiple benefits for students who participate in Tech-Prep

Local Tech-Prep coordinators, certainly advocates for their members' efforts, are almost uniformly convinced that student involvement in Tech-Prep leads to improved outcomes. Few if any consortia have conducted formal evaluations with an appropriate statistical methodology that allows them to measure program impacts. However, coordinators were asked to provide anecdotal evidence about what they believe to be the types of impacts the program may have had on students.

Many coordinators attribute positive changes in students' attitudes to their participation in Tech-Prep programs. Consortium coordinators report that students are more focused and "show a renewed interest in education and staying in school" as a result of Tech-Prep; they cite that attendance has improved and student self-esteem has increased. Many coordinators indicated that students have an increased awareness of the relevance of their classwork to careers. Tech-Prep students seem to

understand employers' expectations and the requirements of different jobs. Coordinators view these outcomes as a result of Tech-Prep's emphasis on career development, applied academics, and, often, work-based learning.

Several consortia credit Tech-Prep with improving academic performance. One rural consortium reports "higher scores on math exit exams," and another Midwest coordinator tells of "dramatic increases in technical skills and knowledge." Tech-Prep has led to a "better-quality student in voc/tech courses" in one urban Southern consortium. Students in several consortia are taking more high-level courses in high school, particularly in mathematics, science, and computer science, according to survey respondents. Other coordinators report improved grades, decreases in course failures, and lower drop-out rates.

Some Tech-Prep programs' emphasis on transition to postsecondary institutions has reportedly affected students' educational goals. One coordinator at a technical college claims that "students are taking higher-level courses and going on to postsecondary" and that they are "better prepared for postsecondary" because of Tech-Prep. A coordinator in a state with statewide articulation and dual enrollment agreements reported an "increased knowledge of the college application process" among Tech-Prep students. However, according to a rural consortium coordinator, Tech-Prep can also cause students to lower their educational sights: the "pursuit of occupations not requiring four-year degrees has increased." Many Tech-Prep advocates, of course, regard realistic, focused plans for a community college education as preferable to unfocused plans for a baccalaureate degree.

Most consortia that recorded their views of potential program outcomes have been implementing Tech-Prep for several years. Even so, many of the more-established consortia joined newer consortia in responding that it is too early in the development of Tech-Prep programs to see any effects on students. One coordinator wrote with authority that "changes in school come in small increments."

REFERENCES

Hershey, Alan, Marsha Silverberg, and Tom Owens. *Promising Practices in Tech-Prep: Local Solutions to Common Problems*. Princeton, NJ: Mathematica Policy Research, Inc., 1996.

National Assessment of Vocational Education. "Interim Report to Congress." Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, January 1994.

National Center for Education Statistics. *Dropout Rates in the Unitd States: 1993*. Washington, DC: U.S. Department of Education, Office of Educational Research and Improvement, 1994.

Parnell, Dale. *The Neglected Majority*. Washington, DC: The Community College Press, 1985.

Silverberg, Marsha K. *Facing the Challenge of Change: Experiences and Lessons of the School-to-Work Youth Apprenticeship Demonstration*. Princeton, NJ: Mathematica Policy Research, Inc., August 1996a.

Silverberg, Marsha K. *Building School-to-Work Systems on a Tech-Prep Foundation: The Status of School-to-Work Features in Tech-Prep Initiatives*. Princeton, NJ: Mathematica Policy Research, Inc., June 1996b.

Silverberg, Marsha K. *The Continuing Development of Local Tech-Prep Initiatives*. Princeton, NJ: Mathematica Policy Research, Inc., January 1996c.

Silverberg, Marsha K., and Alan M. Hershey. *The Emergence of Tech-Prep at the State and Local Levels*. Princeton, NJ: Mathematica Policy Research, Inc., 1995.

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